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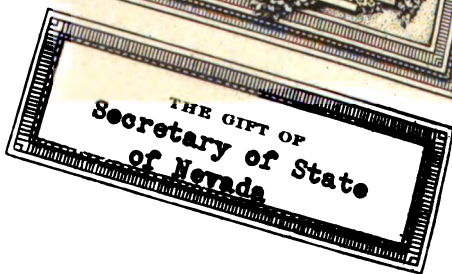
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APPENDIX

TO

Journals of Senate and Assembly

OF THE

TWENTY-NINTH SESSION

OF THE

Nevada. LEGISLATURE OF THE STATE OF NEVADA

1919

VOLUME II



CARSON CITY, NEVADA

STATE PRINTING OFFICE

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JOE FARNSWORTH, SUPERINTENDENT

1919



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UNIVERSITY OF NEVADA

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RENO, NEVADA, 1918

NEVADA WAR GARDENS

Vegetable Gardens in Every Town Back-Yard and on Every
Farm Necessary to Increase Food Production
and Save Transportation

By
DEAN C. S. KNIGHT,
State Leader in War Gardens



Printed at the
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INTRODUCTION

Nevada made a wonderful showing in 1917 by an increase of more than 200 per cent over previous years in the growing of home gardens by utilizing back yards, vacant lots, and fields not previously cultivated. It has been estimated that several million such gardens were grown last year by this Nation, producing more than three hundred million dollars in food products.

The planting of home gardens was a new venture for many urban residents of Nevada, and a few were unsuccessful. However, the increased knowledge of handling the crops, together with the Nation-wide success of the garden movement in 1917, has given a great stimulus to the home gardener this year. On account of the greater demand for food for export in 1918, the people of the Nation are called upon to give more consideration than ever before to this most important movement in food production.

SAVE ON GARDEN SEEDS

The Federal Department of Agriculture has issued a recent statement that there is a shortage of garden seeds, and urges every gardener to buy only the seeds actually required for planting this season, in order that all may be supplied. Plant only on soils that are suitable and properly prepared for vegetable growing. If you have any extra garden seeds, divide with your neighbors.

ACKNOWLEDGMENT

The writer is indebted to J. B. Lynch, in charge of the University Greenhouse, for considerable information concerning varieties of vegetables and their culture; Wm. Stuart, Bureau of Plant Industry, U. S. Department of Agriculture, for Figs. 6 and 7; and to Agricultural Extension Leaflet 6 for Figs. 1, 2, 3, 4, 5, and 10.

NEVADA WAR GARDENS

LOCATION AND CONSTRUCTION OF HOT-BEDS

For a location, a spot facing the south, with a slope in that direction, is the most desirable. After the location has been selected, a fence should be erected 6 feet high, and of the length of the bed to serve as a protection from the wind and as a support for mats and shutters. For convenience, the fence should slant back a little from the bottom, about one foot; it will then form a better support for mats and shutters when leaned against it, and will be much more convenient in working around the beds.

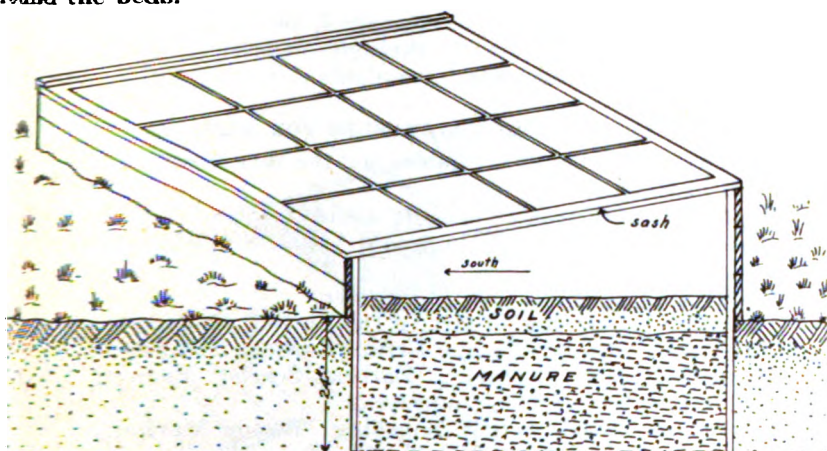


Fig. 1—Construction of Hot-Bed.

The first plank should be set about $3\frac{1}{4}$ feet from the base of the fence and should be 2 inches thick by 12 inches wide. The front plank should be 2 inches narrower. Place the back plank $2\frac{1}{2}$ inches above the ground, and hold in place by driving stakes at the end and middle. Continue the planking in this manner until the desired length is reached. The stakes should, of course, be nailed to the planks. Place the front plank 6 feet from the first, and sink into the ground so that the upper edge will be 5 inches lower than the top of the first plank, which makes a slant of 5 inches to carry off the water. Continue this the same length as the first, to obtain a bed 6 feet wide and of the desired length. Shovel out sufficient soil to bank the planks on the outside about half the height, putting in spreaders to keep the planks from crowding in, and the construction is complete.

Supplying the Heat for Hot-Beds—Throw out the soil in the bed to the depth of 24 inches to make room for the manure. Prepare the required heat by selecting moderately coarse horse manure four or five days before using, turning it once or twice. A horse cartload containing about 36 feet is sufficient for a bed 6 feet square, or two sashes,

the depth of the manure being 1 foot. This should be tramped down and made smooth on top; then put in the soil, cover to a depth of 8 inches, and continue in this manner as far as required.

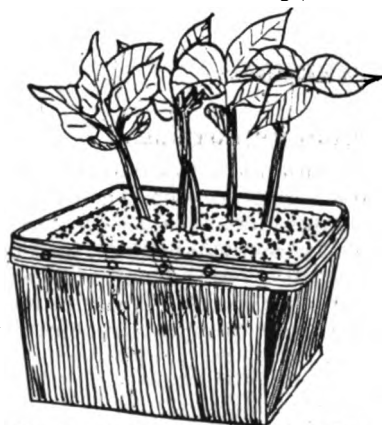


Fig. 2—Fruit-Basket Window-Box.

For heating material, fresh horse manure is generally used. This can be obtained at reasonable rates, and is very satisfactory. The manure may be used on the land after it has served its purpose in the beds; and is then considered worth half the original value. As the manure goes through the process of heating, the ammonia which escapes is of great benefit to the growing crops. The bed should stand a day after it is prepared, to allow the soil to heat through; it is then ready for seeds or plants.

VARIETIES OF VEGETABLES FOR NEVADA

The following is a list of vegetables and the varieties that do particularly well in Nevada:

Asparagus—Conover's Colossal; Palmetto.

Beans—Bountiful Bush; Improved Yellow Six Weeks; Stringless White Wax.

Beets—Cunison Globe; Wild Summer.

Cabbage—Danish Round Head; Danish Ball Head.

Cauliflower—Danish Giant; Erfurt Earliest Dwarf.

Carrots—Parisian Forcing; Earliest Scarlet French Forcing; Denver's Half Long Improved.

Celery—Paris Golden Self-Blanching; Boston Market.

Corn—First Crop Sugar; Golden Bantam; Howling Mob; Adams Early.

Cucumbers—Farquhar's Perfection; Short Green Gherkin.

Egg-Plant—Black Beauty.

Kohl Rabi—Earliest White.

Lettuce—Long Standing; Wonder.

Muskmelon—Honey Drop.

Onions—Yellow Globe Danver's; Ailsa Craig; Adriatic Harletto; Red Wetherfield.

Oyster-Plant—Mammoth Sandwich Island.

Parsnips—Market Model.

Pepper—Sweet Mountain; Neapolitan.

Pumpkin—Sugar or Sweet.

Peas—Prolific Early.

Radish—Nonpareil; Non Plus Ultra.

Rhubarb—Victoria.

Rutabaga—American Purple Top.

Spinach—Farquhar's All Season.

Swiss Chard.

Squash—Mammoth White Bush.

Turnip—Early White Milan; White Egg.

CULTURAL METHODS

Preparation of the Soil—A proper preparation of the soil prior to sowing or planting is one of the most important conditions involved in the process of getting a crop. Plowing, subsoiling, harrowing, raking, and (at some stage of the process) manuring constitute the main operations by which the land, after being stripped of a crop, is put into condition to be planted again.

For all garden crops, the ground should be plowed or spaded (according to size) once before an application of manure is made. In the case of all leaf crops, like celery, cabbage, etc., for the first working which is to turn under the manure a depth of six inches is sufficient, as this covers the manure and also leaves it as near the surface as possible.

If the land is hard or lumpy, a harrow or hand-rake should be used to break up the lumps and pulverize the seed-bed. Lumpy uneven ground or coarse soil is not suitable for planting. Seeds will not germinate uniformly, and the plants will not mature together.

A simple test to determine when garden soil is ready for working is to take a handful of earth from the surface and press it firmly

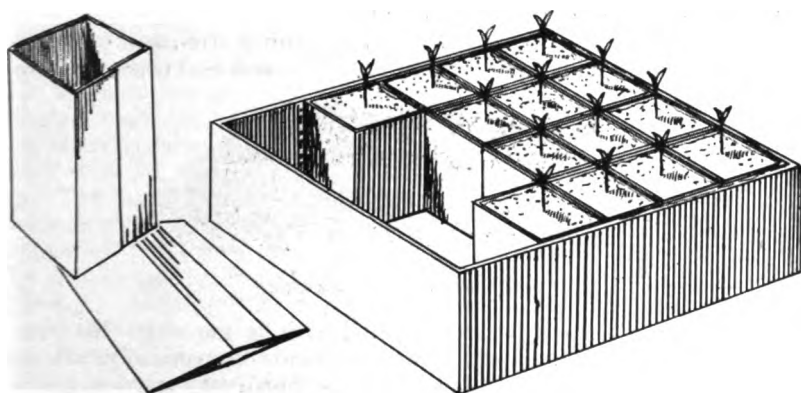


Fig. 3—Individual Boxes for Forcing Certain Plants.

with the fingers. If the earth compacted in this way is dry enough for cultivation, it will fall apart when the hand is opened. This test is applicable only to comparatively heavy soils, which receive the most injury if they are worked when wet.

Proper Time to Plant the Seed—An old but reliable guide for the proper time to sow vegetable seeds is as follows:

First Period—The blooming of the peach, sow peas.

Second Period—The blooming of the cherry, sow peas, spinach, lettuce, onion-sets, and asparagus roots.

Third Period—The blooming of the pear, all of the above with the addition of radish, celery, carrot, beet, onion seed, parsley, tomato seed, cabbage, and parsnip.

Fourth Period—The blooming of the apple, sow all the preceding with the addition of oyster-plant, beans, corn, cucumber, melon, and pumpkin.

Sowing the Seed—The successful germination of the seed, no matter how carefully sown, must depend largely upon the condition of the

ground. On the other hand, unless the seed is carefully placed in the ground and properly covered, the crop cannot get a good start, regardless of the quality of the seed or how well the land has been prepared. When seed is sown in freshly prepared soil, it will make a much better start than on land which has been turned over long enough to become crusty and lumpy on the surface. It is preferable to sow seed immediately after, rather than just before, a rain, since the crust which forms on the surface after a rain partly shuts out the air and prevents free germination. When a heavy fall of rain occurs just after planting, it is well to go over the ground with a rake, to break the crust. Such treatment may cause a difference of 50 per cent in the stand obtained. In planting seeds with a thick husk, like squash, cucumber, or melon, it is important to have the soil in ideal condition to insure sufficient moisture and air for rapid uniform germination. This is not so important with thin-husked seeds that germinate quickly, such as cabbage, turnip, and radish. The seeds of beets, squashes, parsnips, peas, and beans should be planted deeper than the finer seeds, as the seed covering is thicker, and more moisture is required for germination. Garden seeds are planted at from one-fourth inch to three inches, varying with the size of the seed and the season of the year.

Cultivation of Crops—After the plants are up, frequent stirring of the soil will prove beneficial. There is little danger of stirring the soil

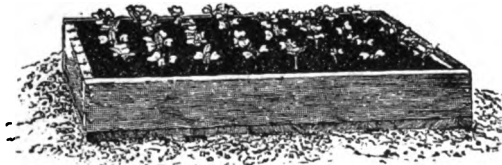


Fig. 4—Table Window-Box.

too often. Do not work the ground when it is too wet. Be sure to keep the soil stirred, and cut down all weeds immediately after the plants come up. This can be done with an ordinary garden hoe. If the weeds are not entirely removed, it will be more difficult to keep them under control during the rest of the season.

Irrigation—When plants give evidence of suffering from lack of moisture during prolonged dry spells, irrigation is necessary. Where a supply of piped water is at hand, the most usual method of irrigation is by sprinkling with a hose. Sprinkling should be practised late in the afternoon. It is not sufficient merely to dampen the surface; a thorough wetting should be given. A more satisfactory and economical method of irrigation is to open small furrows between the rows of growing plants and supply water into these ditches from a hose or pipe. Several hours after the water has soaked in, the dry soil should be drawn back into place.

COLD-FRAME

The cold-frame is very useful in hardening plants that have been taken from the hot-bed and for starting plants in mild climates. It is constructed in much the same way as the hot-bed, except that no manure is used. The frame may be covered either with glass sash or with canvas. A cold-frame may be built on the surface of the ground,

but a more permanent structure suitable for holding plants over winter will require a pit 18 to 24 inches deep. The cold-frame should be filled with a good potting soil. The plants should have more ventilation in the cold-frame, but receive less water, for it is best to keep the soil rather dry.

The plants taken from the cold-frame should be transplanted into ground that has been freshly cultivated. Transplanting to the open field is best done in cool cloudy weather and in the afternoon. This prevents the sun's rays from causing the plant to lose too much moisture through evaporation.

GENERAL INFORMATION ON NEVADA GARDEN CROPS

Asparagus

The value of this plant as a vegetable cannot be overestimated; it is quite extensively grown in Nevada, and, when properly managed, produces a valuable crop. In preparing an asparagus bed that is to stand for any length of time, it is very important to secure good drainage, and on wet soils this is best effected by placing a layer of brick rubbish over the bottom of the bed and connecting this with a drain. On gravelly or other soils which are drained naturally, this is not needed. To obtain the best results from this crop, water should not stand within three feet of the surface.

In all cases the ground must be dug to a depth of 18 inches. Asparagus requires a good soil, neither too heavy nor too light. After the soil is well trenched and settled, a good dressing of well-rotted manure is mixed with the surface soil and forked two or three times before planting. The top dressing of manure should be given annually to the beds. Common garden salt should be applied annually. If scattered over the surface on a showery day, it will readily dissolve and enter the soil. The salt keeps the beds cool in hot weather and prevents the growth of weeds. Asparagus may be planted during the months of March and April, the latter being most desirable. A good plan is to make the beds 3 feet wide, plant two rows 1 foot apart and allow 18 inches between each plant, placing them in alternate order. One-year-old roots give the best results. Make a furrow with a hoe, and plant to the depth of 3 or 4 inches, being careful to spread out the roots thoroughly before covering. Apply water immediately to settle earth around the roots. At all times keep the bed free from weeds. As the foliage turns yellow in the fall, cut it off, rake clean, and leave until March, when a top dressing of manure from 1 to 3 inches may be applied. Cutting may commence the third year, or as soon as there is any grass worth taking. The leading varieties are Conover's Colossal, and Palmetto.

Beans

This familiar crop flourishes best in a rather light gravelly soil, and should never be planted in very heavy land. Beans are extremely sensitive to frost and cold. The bush beans are more hardy than the pole varieties, but, nevertheless, should not be planted until the weather has settled—in northern Nevada, the latter part of May. Nothing is gained by planting beans when the weather is cold, or the land damp and soggy, as they mature early in the season. When the land is sufficiently warm, select a dry and sheltered location, give the ground

a light dressing of manure, put in a good condition of tilth, and plant in drills or rows. Hoe often, but not when too wet. Plant at intervals until the last of July for a succession.

The distance apart for the rows should be from 3 to 3½ feet, and the seed dropped from 4 to 6 inches apart in the row, about 1 inch deep.

When the crop is up it should be hoed lightly and at the second hoeing a little earth drawn toward the plants to support them. Beans should never be hoed or worked when wet either by rain or dew, on account of the injury that may occur from rust or blight. The leading varieties for Nevada are Bush Beans, Stringless Green Pod, Refugee Kidney Wax, Golden Wax, Pole Beans, Kentucky Wonder, Scarlet Runner, Golden Cluster.

Beets

Beets do best on a light sandy soil that is free from shade, and that has been previously manured for some other crop. For the first crop, seed should be sown as soon as the ground can be worked in the spring. Sow the first crop rather thick, as it may save reseeding, which is sometimes necessary on account of severe frosts when the young plants are coming up. After the plants have obtained a good foothold, they



Fig. 5—Testing Seeds for Germination.

should be thinned to a distance of from 6 to 8 inches apart. The best varieties are Crosby's Egyptian, Detroit Dark Red, Crimson Globe, and Arlington's Favorite. Beet greens are also extensively used.

Cabbage

Cabbage seeds are sown in early spring in the hot-bed, and transplanted in the garden as soon as the ground can be prepared. Place the plants in rows 24 to 30 inches apart and about 15 inches in the row. In growing late cabbage, transplanting usually occurs in July or August. Early cabbage must be used shortly after the heads form, but late cabbage may be stored and used during the winter months.

When the lower sides of the cabbage leaves are affected by leaf aphids or lice, spray the insects and leaves with a solution prepared as follows:

Dissolve ½ ounce of soap in water, add ½ ounce of nicotine sulphate, and sufficient water to make a gallon of the solution.

Recommended varieties—Danish Round Head and Danish Ball Head.

Carrots

The tillage, fertilization, and general care of carrots are similar to those of beets. Carrots are never transplanted. They are usually thinned six inches apart in the row. The harvesting season usually commences from July 1 to 10. Plant for the winter crop on good rich soil not later than July 1—and the 1st of June is a safer date to insure a heavy yield.

Winter carrots are harvested from October 1 to 15, and pitted or

stored in a cellar. The leading varieties are Parisian Forcing, Early Scarlet, and Danver's Half Long.

Sweet Corn

Sweet corn, to be at its best, should be eaten within a few hours after it is picked, for its sugar-content disappears very rapidly after it is removed from the garden. For this reason and for its very general popularity, it is an excellent vegetable to grow in the home garden. It should be planted on rich land and cultivated in the same manner as field corn. Beginning as soon as the soil is warm, successive plantings may be made every two or three weeks until late summer. The seed should be planted about 2 inches deep, in drills 3 feet apart, and thinned to a single stalk every 10 to 14 inches. The cultivation should be frequent and thorough, and all weeds should be kept down and suckers removed from around the base of the plant. The best varieties are Golden Bantam, Adams Early, First Crop Sugar, and Howling Mob.

Cucumbers

Cucumbers thrive best on a moist sandy loam soil well supplied with humus. Delay planting until danger of frost has passed. Sow ten seeds in each hill from 1 to 2 inches deep in rows from 4 to 6 feet apart and about 4 feet apart in the row. Later pull all but two or three of the largest plants. Give the ground frequent hoeing until the vines form, after which pull all weeds by hand. Recommended varieties are Farquhar's Perfection and Short Green Gherkin.

Egg-Plant

Sow the seed in the hot-bed or seed-box in early spring, and transplant in the garden in rows 24 to 30 inches apart and 18 inches apart in the row. Delay planting until the ground is warm. Keep the ground loose and moist for rapid growth. The egg-plant will not thrive well on soil too rich in vegetable matter. Black Beauty is a recommended variety.

Lettuce

Lettuce thrives best on a sandy loam soil rich in humus. Sow the seed as early in spring as the ground can be properly worked about $\frac{1}{2}$ inch deep in rows from 15 to 18 inches apart. Later thin plants 4 to 6 inches apart in the row. When head lettuce is desired, transplant the seedlings 5 to 8 inches apart in rows 16 inches apart. Sow seed at intervals of ten days or two weeks. Lettuce does not grow well in the heat of the summer, but produces abundantly during the cool weather in the fall. The recommended varieties are Long Standing and Wonder.

Muskmelon

Muskmelons thrive best on a sandy loam soil well supplied with humus. They are very sensitive to frost; thus are usually planted the last of May or in early June in rows 6 feet apart and 4 feet apart in the row. Plant ten seeds $1\frac{1}{2}$ inches deep in each hill and later thin to four healthy plants. Honey Drop is a recommended variety.

Onions

The onion thrives under a wide range of climate and soil conditions, but a rich sandy loam containing plenty of humus is most desirable.

This crop requires considerable hand-work in thinning and weeding, and the sandy soils are most easily worked. As a general rule, it is well to plant onions after a crop that has been cultivated and kept free from weeds the previous season. In northern Nevada sow as early in the spring as the soil can be worked. In the south, onion sets are frequently put out in the autumn and carried through the winter with the protection of a little hay or straw. Three methods are used for propagating onions: First, by sowing the seed in rows where the crop is to grow; second, by sowing the seed in especially prepared beds and transplanting the seedlings to the open ground; and, third, by planting sets which have been kept through the winter. The first method is used by large commercial growers on account of the amount of labor involved in the others. Onions planted from sets will ripen earlier than those from seeds sown in the fields. The best varieties are Danver's Yellow Globe, Prize Taker, and Red Wetherfield.

Oyster-Plant

See Carrots for cultural methods.

Parsnips

See Carrots for cultural methods.

Peppers

Seeds of peppers should be sown in a hot-bed or in a box in the house about eight weeks before the time for transplanting in the garden. The plants are tender, and should not be transplanted until the ground is warm and all danger of frost is past. Set the plants 15 to 18 inches apart in rows $2\frac{1}{2}$ to 3 feet apart. The cultivation and treatment of peppers should be the same as for tomatoes and egg-plants. There are a large number of varieties of peppers including the sweet kinds and the hot peppers.

The following varieties are recommended: Ruby King, Sweet Mountain, Bell, or Bull Nose, of the sweet peppers; Long Red Cayenne or Red Cluster, of the hot peppers.

Potatoes¹

The potato occupies an important place in the diet of our entire population. It is not a difficult crop to grow under irrigation, and requires much less attention than a variety of vegetables planted in the same area. It will thus be possible for many people in Nevada, who cannot devote the time required for a vegetable garden, to plant small tracts of potatoes. By following the instructions included in this pamphlet the crop will be grown with the least possible amount of labor, and at the end of the season the family will have on hand a year's supply of potatoes.

Soils for Potatoes—The potato requires a fertile mellow soil, either a sandy or clay loam, well supplied with organic matter. The cultivation is easier on the sandy loams, and the danger of overirrigation is less, although, when properly handled, the clay loams produce equally well. Soils rich in humus or vegetable matter are especially well suited to potato culture; thus no other staple crop grown in Nevada is so well adapted to old alfalfa land.

Preparing the Ground for Planting—The ground should be cleared of all rubbish, such as rocks, bricks, boards, chips, and weeds, for, if

¹Nevada Agricultural Experiment Station Bulletin 87.

turned under by the plow or spade, they will prevent the seed-bed from packing sufficiently for the uniform and rapid germination of the seed after planting.

The ground should be plowed or spaded at least 8 inches deep as soon as possible, care being taken not to work the ground when too wet, which is indicated by the soil sticking to the shovel or plow in turning. The same day the ground is plowed or spaded it should be harrowed or raked, and a coarse-dirt mulch left on the surface. This coarse mulch prevents rapid evaporation, and after a rain is easily renewed. If a fine-dirt mulch is made after spading or plowing, a heavy rain will pack the surface to such an extent that a new mulch is difficult to prepare. The ground should remain in this condition from 1 to 3 inches until planting-time to furnish a firm seed-bed for uniform germination of the seed and rapid development of the young plants.

Liming Heavy Soils—Considerable of the soil in Nevada is heavy clay that is prepared for crops and cultivated with some difficulty;

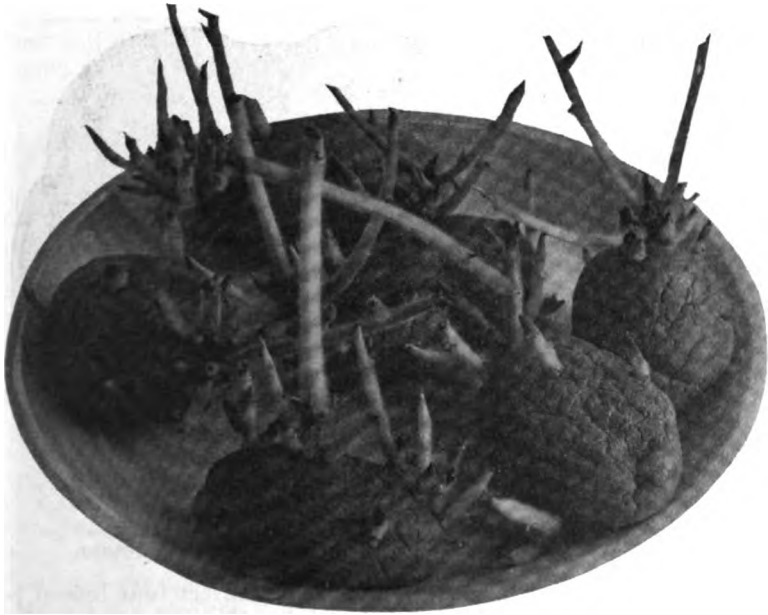


Fig. 6—Excessive Sprouting saps the vitality of the Potato for Seed.

also, when the proper hoeing and cultivation is not given, the results are often unsatisfactory. This objection can be largely overcome by applying gypsum when preparing the ground for planting. Two methods may be used to apply the gypsum. If the ground is to be spaded by hand, the gypsum can be spread over the area quite uniformly with a shovel, and when the ground is spaded the lime is turned under with the inverted soil. If the ground is to be plowed, the gypsum may be applied with a shovel after plowing, and later covered by the harrow in the preparation of the seed-bed. Ten pounds of gypsum should be used for every 100 square feet of surface.

Irrigation Before Planting—If irrigation is necessary before planting, it should be given before the ground is spaded or plowed. The

coarse-dirt mulch left on the surface by the rake retains sufficient moisture in the soil for sprouting the seed and for the early development of the plant. An irrigation after spading would cause the soil to pack too much, and a second spading would be required.

Seed—The Nevada Agricultural Experiment Station has tested a number of varieties during the past four years and recommends the following early and late varieties:

Early varieties: Early Russet, Early Red, Early Ohio.

Late varieties: Burbank, Great Divide, and Peerless.

An important factor in growing potatoes is the treatment of the seed for the prevention of scab and other diseases. The following treatment is recommended: All seed potatoes should be soaked in a solution of mercury bichloride (corrosive sublimate), 4 ounces to 30 gallons of water, for $1\frac{1}{2}$ hours. Formalin treatment will not kill *rhizoctonia* as completely as mercury bichloride. The solution should be placed in a wooden barrel or tank. It corrodes metal. It should be poured out

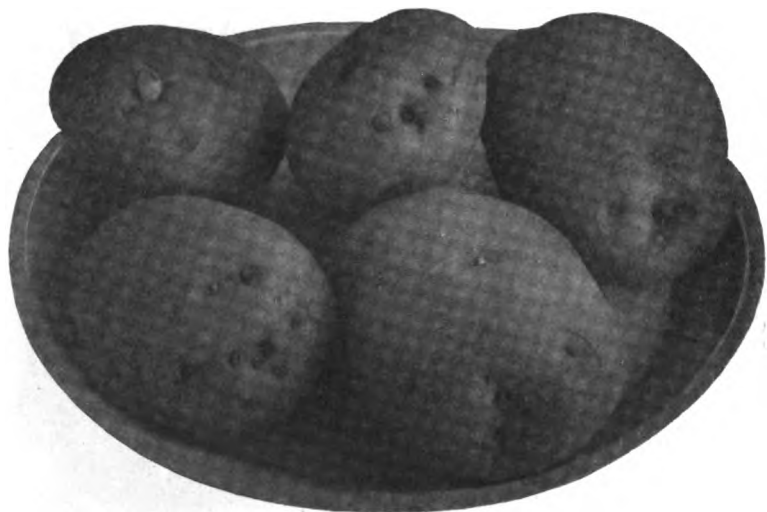


Fig. 7—The Ideal Stage of Sprouting for the Seed Potato.

and made up fresh after it has been used to disinfect four lots of potatoes. It is poison to eat, but not to the touch. Treated potatoes should not be eaten or fed. After the potatoes have been treated, they should be stored in new sacks which have been similarly disinfected in the solution.

Another important factor is the cutting of the large potatoes into small pieces to increase the acreage to the greatest possible extent.

Cutting the Seed—The potatoes should not be cut in pieces less than 1 ounce in size, and the best crops will be obtained where the pieces are from $1\frac{1}{2}$ to 2 ounces. The seed-piece should be large enough to give the plant a good start. Each piece should have two good eyes. Where more than this number of eyes is present and also with pieces 2 ounces or more in weight, the soil must be very fertile and the seed-pieces planted farther apart in the rows; otherwise the percentage of small tubers may be too great.

A good method to follow in cutting the seed is to begin cutting from the stem end, diagonally across the potato, being careful to cut the seed end so that too many eyes are not left on one piece.

Rate of Seeding—Where 1-ounce seed-pieces are used, the potatoes should be planted in rows 3 feet apart and about 15 inches apart in the row. With 2-ounce seed-pieces the distance apart in the row may be 18 inches.

The amount of real seed required per acre with different-sized seed-pieces is shown in the following table:

Weight, ounces	Pounds of seed 15 inches between hills
1.0.....	720
1.5.....	1,080
2.0.....	1,440

Planting—In most parts of Nevada the late potatoes are planted between May 1 and 20, usually about 4 or 5 inches deep, on land spaded or plowed at least 8 inches deep before the 1st of May.

On small tracts a common method of planting is to plow the land shallow and drop the seed in every third furrow. A large number of the home potato patches, however, will be too small for the use of the

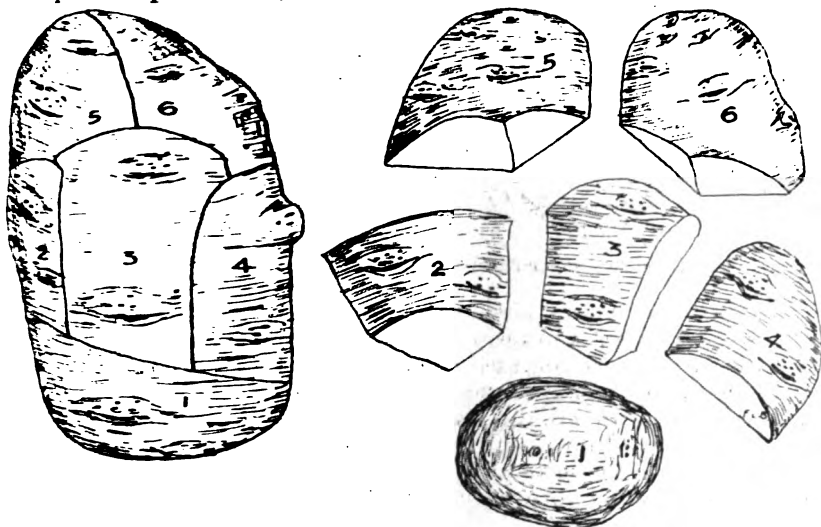


Fig. 8—A Potato weighing 10 to 12 ounces properly cut for seed.

plow, in which cases the planting may be done with the use of the shovel or hoe. On a small tract it is advisable to mark out the land in checks, so that the hills of potatoes will be uniformly spaced.

Irrigation—The potato rows should be hilled up with good deep furrows between them, so that, when irrigated, the water will supply the deep-feeding roots, but will not come in contact with the tubers.

A too common error with the potato grower is the use of shallow furrows for carrying the water. The chief danger is in saturating the ground around the tubers, causing the soil to become hard and compact, a very undesirable condition for the development of a good hill of uniform potatoes. It is thus very important to use light irrigations in good deep furrows.

In the irrigation experiment with potatoes conducted at the Nevada Agricultural Experiment Station, the results of the test for the first four years favor the 3-inch irrigations as compared with 6- and 9-inch applications. The most practical results were obtained with six 3-inch irrigations, or a total of 18 inches of water, given when the plants showed a tendency to wilt.

In the irrigation of potatoes, the best results were obtained when the first irrigation was withheld until the plants turned a darker green color, but had not wilted. This condition permitted the greatest possible root development to supply the necessary food for a maximum crop. Early irrigation, before the plants showed any need of water, greatly retarded the proper development of root system and resulted in a decreased yield of potatoes.

After irrigation had started, it was found very essential never to allow the plants to suffer for lack of water during the growing season. Where any plants wilted slightly after irrigation commenced, the growth of the plant was greatly checked, and the yield and quality of the tubers were seriously affected.

The potato crop should never be irrigated by means of flooding or surface sprinkling, since both methods cause the soil to pack around the tubers and prevent the ground from receiving sufficient water for the need of the plants. All water applied to the potato crop should be run in small streams through deep furrows made between the rows of potatoes.

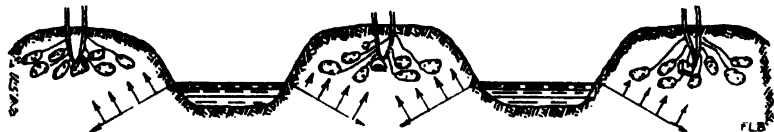


Fig. 9—The Proper Method of Irrigation for Potatoes.

Cultivation—Cultivation should be given after each irrigation until the plants are so large as to be injured by the horse or cultivator. Cultivation is just as important as irrigation for success in potato culture, since it thoroughly aerates the soil, keeps down the weeds, helps to retain moisture in the soil and maintains a good deep furrow for irrigation. The soil should be kept in a moist condition until the potatoes are fully grown. In most of the potato districts of Nevada, irrigation will generally cease from August 15 to 31, varying with the season and time of planting.

Practically all cultivation on the home potato patches will be given with a hoe. Even though weeds are not present to any great extent, cultivation with the hoe is still very important in order to keep the soil in a loose mellow condition around the tubers. The most important reminder for the potato-grower is to eradicate all the weeds while still small. If weeds are allowed to grow for several weeks, they are not only removed by the hoe with considerable difficulty, but they also drain the soil of moisture and plant-food which should be utilized by the potato plants for a maximum production.

Radishes

Radishes are in a class by themselves as the quickest and most easily grown of garden crops. They do well in a rich, light, sandy loam soil, but require a good supply of moisture to make a select round radish.

This crop is usually planted as a companion crop, a filler among the slower growing coarser crops, and requires little cultivation beyond that necessary to properly prepare the ground. Radishes can be readily grown to marketable size in three weeks from the time of planting and make a sufficiently rapid growth to keep ahead of the weeds.

In order to have a constant supply of radishes, successive sowings must be made throughout the season, at intervals of about a week. The best rule is to sow seed when the lot preceding has just broken ground. The sowings are then somewhat regulated by weather conditions which vary the rate of growth. It is not good policy to follow one crop of radishes with another, but a better practise is to raise each crop on different ground. The best varieties are French Breakfast, Nonpareil, Non Plus Ultra.

Rhubarb

Rhubarb is now quite extensively grown in Nevada. The general practise is to plant pieces of roots taken from established plants in another bed. The root cuttings may also be obtained from the seed house. Plant the root pieces about 4 feet apart in good rich soil. A row of ten plants will furnish sufficient rhubarb for the average family. In the fall the plants should receive a good top-dressing of manure.

Spinach

Spinach is ready for use early in the spring. It is usually sown about the first of September and at the beginning of winter is protected by a covering of straw or leaves. This crop generally lasts until the first of June, when that sown in the spring will be ready for use. It is sown in drills 2 feet apart and thinned to about 8 inches apart in rows. The crop responds to a liberal amount of manure. For spring sowing, plant the Round Thick-leaved and, for later use, Long Standing. For fall sowing, the Arlington Leaf is the favorite.

Squash

Squash is exceedingly tender, and must not be planted in spring until all danger of frost is past. Plant in rows 6 feet apart with hills 4 feet apart in the rows. A good plan is to put a shovelful of manure to each hill and mix with coal ashes to protect the plant from the borer. Plant the seed about 1 inch deep. The seeds are often planted with a crop of beans or peas, two rows of peas or beans being cultivated in each interval between the squash rows. The beans or peas are harvested early in the season.

When picking for storage, great care should be taken not to bruise the squashes or break off the stems. They should be stored in an even temperature as near 50 degrees as possible. The leading varieties are Mammoth White Bush, Boston Marrow, and Hubbard.

Tomatoes

In Agricultural Extension Leaflet No. 2, C. J. Fairchild presents the following information on tomato culture:

THE HOT-BED: I sow my seed the first week in March in hot-beds, 6x6 feet, which is large enough to grow 2,000 plants. I excavate to a depth of 2 feet and fill with fresh horse manure, a few inches at a time, put in layers and tread in well. A manure with just a medium amount of straw (used as bedding for horses) is best, and not too wet. The

manure should be put in the excavation at least one week before sowing the seed, a thermometer placed several inches below the surface, and the temperature closely watched. If the bed is properly made, the manure will at once begin to heat and perhaps register as high as 120 or 130 degrees in three or four days, but will soon recede and in about four more days will have cooled down. As soon as it is down to 90 degrees you can place about four inches of ordinary soil—light loam is preferable—on the bed, having first built a frame of 1x12 inch boards 6x6 feet square, and placed in the bed. You are now ready to sow your seed, after having firmed the soil and watered to a depth of an inch or two with warm water. Sow the seed thinly broadcast and then sift one-fourth inch of soil on the seed and again water lightly. For frame coverings we use the best grade of unbleached muslin. Four yards are sufficient to make a cover for your bed, and I prefer it to glass. Have it sewed together to make a cover 6x6 feet and tack it on a frame of 1x3-inch strips. Place this on your bed tightly. Your hot-bed is now completed except, during severe weather at night, use extra covering, such as double burlap or carpet. The bed should be examined each morning, and as fast as dry spots show wet them, so that the seed will germinate properly. In six to ten days the seed should be up. After plants are up, water as little as possible; if the days are warm, air the bed by raising the frame a few inches on the highest side to prevent plants from becoming drawn. As the plants develop, give more ventilation until finally you can take the frame off entirely from late afternoon until evening, so as to gradually harden them.

THE COLD-FRAME: When the plants have attained their true leaves and before they begin to get spindling, which will be in five or six weeks after sowing, transplant into a larger bed made the same as your hot-bed, but use no manure for bottom heat. This frame can be made any size you wish. Set the plants 4 to 6 inches each way in ordinary garden soil, not too rich. This frame will need to be 16 inches high to keep the plants from touching the cloth. The plants will grow in a frame of this kind and can be left there until the weather is favorable to transplant in the open ground.

Be sure to harden the plants off by removing the cloth in the daytime. But care must be exercised in this so as not to burn the foliage, which would occur if it is left off during the hottest hours of the day for the first week. After that time the cover can be left off all day in order to harden them sufficiently to withstand transplanting in the open ground.

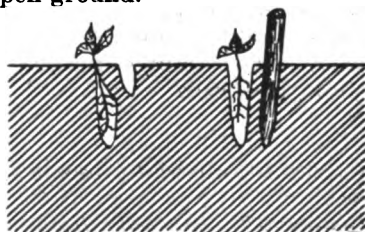


Fig. 10—Improper Transplanting.

TRANSPLANTING: Plants should be ready for the open ground in from five to six weeks after setting in this bed. When ready to transplant, water the bed thoroughly at least an hour before removing and block out the squares about 3x3 inches and 4 inches deep with a sharp heavy knife. Convey to field immediately for setting out, having first irrigated the field. As fast as a row

is set, turn water through the furrows close enough to the plants, so

that they will readily get what moisture they need. It will be necessary to let the water run for only a short time, for if it should be an extremely hot day, you might burn the foliage. We set in this way, regardless of how hot the day, and seldom have a plant wilt. If the plants are right and handled according to these directions, you will have no trouble on this score.

We set extremely large plants, but well proportioned—a plant about three months old. We never force our plants in beds, as to force them makes them too tender when transplanted; but when we get them in open ground we give them a start by furrowing about 4 inches from the plant and scattering hen-droppings in the furrow—about two waterbucketfuls to 100 feet of row. Then we cover by furrowing 2 inches to one side of the first furrow and run water in last furrow. The water gradually dissolves the manure and the young plants readily get it. It never burns the plants when used in this way. Do not use a larger amount nor nearer than four inches from a newly set plant. After plants have attained a larger growth, do not use it at all, as the ground is full of small fibers and roots and will injure them. If used immediately after the plants are set, it is a great benefit, as it gives them a good quick stimulant just when needed. I would not advise fertilizing in this way after fruit begins to set, as it tends to impair the quality. We use several tons of hen-droppings in this way each year.

I should say here that it is very essential when taking plants from the cold-frame to the field not to remove any dirt from within 3 inches of each plant while in process of transplanting.

SOIL AND FERTILIZERS: A light sandy loam, well drained, is best for tomatoes. It should not be too rich, as a rich soil gives a large growth of vine at the expense of the fruit. Besides, the fruit comes too late to ripen in this climate.

We use about twenty loads of horse manure per acre, put on in the fall and plowed under at once. In the spring we disk the ground thoroughly and roll so as to leave it well firmed. Tomatoes should not be grown more than two successive seasons on the same ground. For rotation, seed to alfalfa for at least two years.

We set our plants 3 feet each way. A heavier soil would require them to be set $3\frac{1}{2} \times 3\frac{1}{2}$ feet. Twenty tons per acre is not an unusual yield. We seldom need to trim our vines, as we need considerable foliage to protect the tomatoes from sun and scald. If the vines are inclined to grow too rank, it is well to trim to three main stalks, removing suckers as soon as they are noticed and just trim off the tips of the main stalks after a good amount of fruit is set.

Turnips

The turnip thrives best on a sandy or gravelly loam, well enriched and thoroughly worked. Sow the seed one-half inch deep in rows about 14 inches apart, as early in spring as ground can be worked. After the plants have reached the proper size, thin to 6 or 8 inches apart in the row. The Early Milan Top and the Early Purple Top are the principal varieties.

LENGTH OF TIME DIFFERENT SEEDS RETAIN THEIR VITALITY

Artichoke.....	5 years	Kohl Rabi.....	7 years
Asparagus.....	4 years	Leek.....	2 years
Beans.....	5 years	Lettuce.....	5 years
Beets.....	5 years	Melon.....	7 years
Broccoli.....	5 years	Onion.....	2 years
Brussels Sprout.....	7 years	Okra.....	3 years
Cabbage.....	7 years	Peas.....	4 years
Carrots.....	5 years	Parsnips.....	1 year
Cauliflower.....	7 years	Pumpkin.....	7 years
Celery.....	8 years	Parsley.....	3 years
Corn.....	2 years	Radish.....	3 years
Cucumber.....	12 years	Salsify.....	2 years
Dandelion.....	3 years	Spinach.....	3 years
Egg-Plant.....	7 years	Squash.....	7 years
Endive.....	9 years	Tomato.....	5 years
Kale.....	5 years	Turnip.....	5 years

Vegetable	Quantity for the foot of the row	Time of planting	Time of sowing	Time of succession	Time of harvest
Asparagus seed	1 oz.	Early spring.	September to January.	Third spring.	12
Asparagus plants	50	Early spring.	April to August. Sow for succession.	Following spring.	15 to 20
Beans, Bush	About 1 lb.	Late spring.	April 15 to August. Sow for succession.	45 to 65 days.	18 to 24
Beans, Pole	8 oz.	Late spring.	All year round. Sow for succession.	75 to 90 days.	Hills, 36-48
Beets	8 oz.	Spring.	January to April. July to October.	80 to 100 days.	12 to 18
Cabbages	1 oz.	Early spring in hot-bed.	All year round. Sow for succession.	Early.	24 to 30
Carrots	1 oz.	Spring.	June to January.	110 days.	12 to 18
Cauliflower	1 oz.	Early spring in hot-bed.	January to June.	6 months.	24 to 30
Celery	1½ lbs.	Early spring in hot-bed.	April 20 to July 15.	80 to 100 days.	18 to 20
Corn	1 oz.	Spring.	April 15 to June 15.	120 days.	Hills, 36
Cucumber	1 oz.	Spring.	February to April. Sow for succession.	160 days.	48 to 72
Egg-plant	70 roots.	Spring.	January to May.	8 months.	24 to 30
Horseradish	1 oz.	Early spring.	January to April. July to October.	46 days.	18 to 24
Kale	1 oz.	Early spring.	January to May. July to October.	4 months.	18
Kohi rabb	1 oz.	Early and late spring.	All year round. Sow for succession.	65 to 80 days.	15 to 18
Lettuce	1 oz.	Late spring and early summer.	April 20 to June.	120 to 140 days.	Hills, 48-72
Monkswagon	1 oz.	Late spring.	May to June.	120 to 140 days.	Hills, 96
Watermelon	1 oz.	Early spring.	November to March.	125 to 150 days.	12 to 14
Onion	1 oz.	Spring.	All year round.	Any time.	12 to 18
Parsley	1 oz.	Early spring.	March to June.	4 months.	15
Parsnip	1 oz.	Early and late spring.	All year round. Sow for succession.	8 to 12 weeks.	14 to 16
Peas	2 lbs.	Early spring in hot-bed.	February to March. Transplant.	100 to 125 days.	18
Peppers	1 oz.	Late spring.	March to June.	30 to 45 days.	Hills, 96
Pumpkin	1 oz.	Spring. Sow for succession.	All year round.	Next spring.	2
Radish	1 oz.	Spring.	February to May. Transplant.	Second spring.	1 to 1½
Rhubarb	33	Early spring.	January to April.	Next spring.	12
Rhubarb roots	33	Early spring.	February to May.	6 months.	24
Salad	1 oz.	Early spring and fall.	All year round. Sow for succession.	40 to 48 days.	12 to 15
Spinach	1 oz.	Late spring.	May to June.	65 to 160 days.	12 to 18
Squash	1 oz.	Early spring in hot-bed.	August to April. Sow for succession.	180 days.	Hills, 96
Tomato	1 oz.	Spring and summer.		60 to 75 days.	48 to 72
Turnip	1 oz.				Hills, 48-72

"Early spring" means as soon as the buds in the trees begin to swell and the ground can be worked into gardening condition. This may be in March or April. Frosts have not passed, and such plants, if not too succulent, will stand a frost.

"Spring" refers to those vegetables which are not so hardy as the above, and are usually planted later. Early planting, if necessary, may occur a week after the foregoing.

"Late spring" is the time of the year, when the ground is well warmed and all frosts are passed. This probably will be in May.

"Early summer" means planting in June and July.





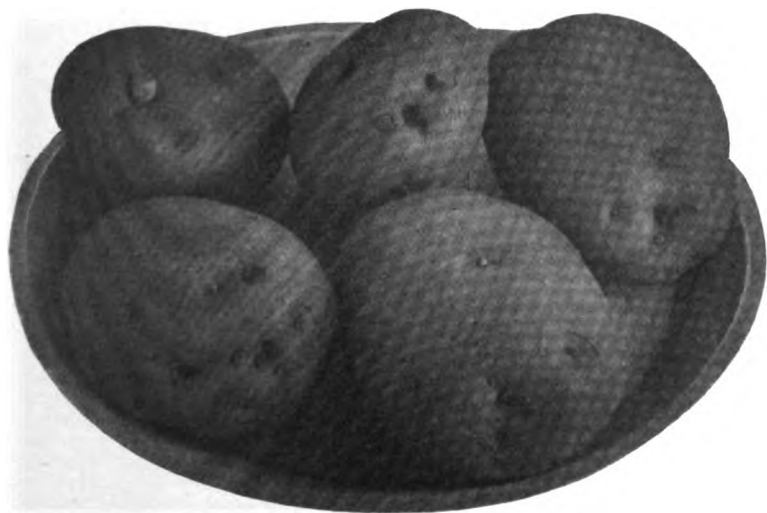
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RENO, NEVADA, 1918

POTATOES AS A WAR FOOD

The Increased Use of Potatoes as a Table Food Is
Necessary to Conserve Our Wheat and Meat



MANY WAYS OF USING POTATOES

By

MARGARET M. JOHNSON

State Leader in Club Work

Name.....Club No.....

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STATE PRINTING OFFICE—JOE FARNSWORTH, SUPERINTENDENT
CARSON CITY, NEVADA



POTATOES AS A WAR FOOD

Are you eating your share of the country's immense potato crop? The cost of potatoes is low, there is no shortage, and there are many different ways of using them.

Potatoes are the most economical starchy food. Using more potatoes will help save the wheat. They may be combined with protein foods to make meat substitute dishes.

Potatoes should be cooked in ways that will preserve all the food value possible. If they are washed thoroughly, and then, without being soaked or pared, are put on to cook in boiling water and kept boiling, there is practically no loss. If they are pared before cooking, valuable mineral matter is cut away in paring and dissolved by the action of the water in cooking. It is easy and economical to remove the skins after the potatoes are cooked. Cold water used at the beginning of the cooking process dissolves and soaks out valuable protein and minerals. Vigorous boiling tears and wastes the potatoes and does not cook them any faster than gentle boiling, because the temperature of boiling water is the same whether it is bubbling quietly or jumping furiously. Fuel and food value will be saved by boiling all vegetables gently. In most of the recipes given below, potatoes cooked in their skins may be used.

BAKED POTATOES

Plain Baked Potatoes

Choose smooth potatoes of medium size. Wash and scrub them thoroughly. Bake in a moderately hot oven from 40 to 60 minutes, or until done. If the oven is too hot, a hard crust is formed on the potatoes; if the oven is too cool, they become soggy. If potatoes are brushed with fat before baking, it will tend to prevent a hard crust forming on the outside. When done, pierce the potatoes with a fork or break the skin to let the steam escape. Serve at once.

Stuffed Potatoes

Cut a slice from the side of baked potatoes or cut them in halves. Remove the pulp, mash it, and add butter, hot milk, and salt in the proportions given for mashed potatoes. Beat well. Fill the skins with this mixture, and bake from 8 to 10 minutes in a hot oven until well browned. To vary this, add to the mashed potatoes, before skins are filled, any one of the following: Beaten egg-white—1 egg-white to 3 medium-sized potatoes; chopped meat— $\frac{1}{2}$ cup to 3 medium-sized potatoes; grated cheese— $\frac{1}{2}$ cup to 3 medium-sized potatoes; chopped parsley— $\frac{1}{2}$ tablespoon to 3 medium-sized potatoes; chopped nuts— $\frac{1}{2}$ to $\frac{3}{4}$ cup to 3 medium-sized potatoes.

Franconia Potatoes

Wash and pare medium-sized potatoes very thin. Cook in boiling salted water 10 minutes. Drain, rub off skins, and place in a pan in which meat is roasting. Bake about 45 minutes or until soft. Baste occasionally with liquid in the pan. If baked on a rack with meat, and there is no liquid for basting, brush the potatoes with fat before baking, so that a hard crust will not form on the outside.

Sliced Potatoes

Prepare as for Franconia potatoes. Cut them in $\frac{1}{4}$ -inch slices, and sprinkle with a little flour. Put them into a pan containing a small amount of hot fat, and cook them in the oven until evenly browned.

Escalloped Potatoes

Remove the skins from boiled potatoes and cut them in slices one-fourth inch thick. Arrange the sliced potatoes in layers in a buttered baking dish, covering each layer with white sauce. (See recipe below.) Sprinkle the top with

buttered crumbs, and bake about 20 minutes. For variation sliced hard-cooked egg, grated cheese, or minced ham may be added in layers.

White Sauce

Take 2 tablespoons butter, 2 tablespoons flour, 1 cup milk, $\frac{1}{2}$ teaspoon salt, few grains pepper. Melt butter, remove from fire, add flour and seasonings, and stir the mixture until smooth. Replace on the fire, add milk, and stir until it thickens. Cook five minutes, stirring constantly.

BOILED POTATOES

Plain Boiled

Select potatoes of uniform size. Wash and scrub thoroughly. Cook in boiling salted water (1 teaspoon salt to 1 quart of water) with the cover of the kettle ajar, until tender. Drain off the water and let the potatoes stand uncovered on the stove a few minutes to allow the steam to escape. This makes the potatoes more mealy. Serve in the jackets or remove them and serve potatoes plain or with melted butter or white sauce.

Browned Potatoes

Remove skins from boiled potatoes and turn into a frying-pan containing a small amount of fat. Brown well.

Mashed Potatoes

Put hot boiled potatoes through a ricer, or mash thoroughly. To each pint of potatoes add 1 tablespoon of butter, 4 tablespoons of hot milk, and salt and pepper to taste. Beat until light and creamy. Serve hot.

Steamed Potatoes

In steaming potatoes, the patent steamer, the round steamer, or a colander placed over a kettle of hot water may be used. If the colander is used, it must be set down into the kettle so all holes come below the top of the kettle, and the cover must fit tight. Prepare the potatoes as for boiling. Place them in the steamer, cover tightly, and steam 40 to 60 minutes, or until tender. Serve in the same way as boiled potatoes.

WAYS OF USING LEFT-OVER POTATOES

Potato Cakes

Shape cold mashed potatoes into small cakes. Brown them in a frying-pan in a small amount of hot fat. Egg or fish may be added.

Potato Croquettes

Add a little chopped parsley and 2 egg-yolks to 2 cups cold mashed potatoes. Shape into balls. Roll in bread crumbs, beaten egg, and bread crumbs again. Fry in deep fat. A half-cup of finely chopped cooked spinach may be added before shaping the croquettes.

Potato Puff

Add beaten egg-whites to mashed potatoes (1 egg to 1 cup of potato). Beat well. Pile lightly in an oiled baking dish, and bake in the oven until it puffs and browns. Egg-yolks or grated cheese may be added.

Spanish Potatoes

Season 3 cups hot riced potatoes with 3 tablespoons butter, $\frac{1}{2}$ cup milk, and salt to taste. Beat vigorously 5 minutes. Add $1\frac{1}{2}$ canned pimientos, cut in small pieces, and beat until well blended. Reheat and serve.

Potato Soup

Take 2 cups hot riced or mashed potatoes, 1 quart milk, 2 slices onion, 3 tablespoons butter, 2 tablespoons flour, $1\frac{1}{2}$ teaspoons salt, $\frac{1}{2}$ teaspoon celery salt, $\frac{1}{2}$ teaspoon pepper, few grains cayenne; 1 teaspoon chopped parsley may be added if desired. Scald the milk with the onion. Remove the onion, and add the milk slowly to the potatoes. Melt the butter, add to it the dry ingredients, and stir until well blended. Add this to the liquid mixture, stirring constantly, and boil the soup for one minute. Strain if necessary; add the parsley and serve.

Potato Salad

Take 6 cold boiled potatoes, 4 tablespoons salad oil or melted butter, 2 tablespoons vinegar, $\frac{1}{2}$ tablespoon salt, 2 tablespoons chopped parsley, or $\frac{1}{2}$ teaspoon celery salt, few drops onion juice. Cut the potatoes in cubes. Make a dressing by mixing thoroughly the other ingredients. Pour this over the potatoes, and allow them to stand for 15 minutes. Drain off any dressing which has not been absorbed. Serve with boiled salad dressing or mayonnaise. Chopped celery, cucumbers, or any left-over vegetable, or hard-cooked eggs may be added to the salad.

Boiled Salad Dressing

Take $1\frac{1}{2}$ tablespoons butter, 2 tablespoons flour, $\frac{1}{2}$ teaspoon salt, $\frac{1}{2}$ cup water, $1\frac{1}{2}$ tablespoons sugar, $\frac{1}{2}$ cup vinegar, 1 teaspoon mustard, 2 egg-yolks. Melt the butter, and stir in the dry ingredients which have been mixed together. Pour over this gradually the water and vinegar. Cook until the mixture thickens. Beat the eggs until light, and pour the mixture over them, beating vigorously.

Creamed Potatoes

Cut cold boiled potatoes into cubes. Heat in white sauce, using 2 cups potatoes to 1 cup white sauce. (See recipe for White Sauce under Escalloped Potatoes.)

Potatoes Au Gratin

Put creamed potatoes in an oiled baking dish. Cover with buttered crumbs, and bake in the oven until the crumbs are brown.

Delmonico Potatoes

To potatoes au gratin add $\frac{1}{4}$ cup of grated mild cheese, arranging the potatoes and cheese in alternate layers before covering with crumbs. Bake until brown.

Potatoes a la Antlers

Cut cold boiled potatoes into cubes. Put into saucepan with 1 tablespoon fat to each cup of potatoes. Sprinkle with salt and generously with paprika. Add 1 cup cream or milk. Cook slowly 40 minutes.

Lyonnais Potatoes

Cook five minutes 3 tablespoons fat with 1 small onion cut in thin slices. Add 3 cold boiled potatoes cut in slices and sprinkled with salt and pepper. Stir until well mixed with onion and fat. Let cook until potato is brown underneath. Fold and turn out on a hot platter.

Hash

Use 2 parts cold boiled potatoes to 1 part meat, or equal amounts of each. Chop meat and chop or mash potatoes. Season with salt, pepper, and onion, and moisten with gravy or water. For each cup of hash heat 1 tablespoon of fat in a frying-pan. Put in the hash, and cook slowly without stirring until a brown crust forms on the bottom. Fold like an omelet.

French Hash

Put meat and gravy in a deep dish, cover with mashed potatoes and bake till golden-brown.

Hashed Brown Potatoes

Try out fat salt pork cut in small cubes. Remove scraps. There should be $\frac{1}{2}$ cup of fat. Bacon drippings may be used. Add 2 cups cold boiled potatoes finely chopped; season with pepper and salt. Mix potatoes thoroughly with fat. Cook three minutes, stirring constantly. Let stand to brown underneath. Fold as an omelet and turn out on a hot platter.

MEAT SUBSTITUTE DISHES WITH POTATOES

Escalloped potatoes, using egg or cheese.

Stuffed potatoes, using cheese or nuts.

Potato puff.

Delmonico potatoes.

Oak Hill Potatoes

Cut 4 cold boiled potatoes and 6 hard-cooked eggs into $\frac{1}{4}$ -inch slices. Put layers of potatoes in buttered baking-dish, sprinkle with salt and pepper, and cover with layer of eggs. Repeat, and pour over it 2 cups of thin White Sauce. (Make thin White Sauce by using 2 cups of milk instead of 1 in the recipe for White Sauce given above.) Cover with buttered crumbs, and bake until crumbs are brown.

Potato Souffle

To 2 cups smooth, well-seasoned, and moist mashed potatoes add the yolks of 2 eggs. When a little cooled, stir in lightly the whites of 2 eggs beaten very stiff. Put the whole into a baking-dish, and brown in a quick oven.

Potato and Nut Salad

Mix 2 cups cold mashed potatoes and 1 cup of nut-meats broken in pieces. Marinate with French dressing, or mix with boiled salad dressing.

Creamed Potatoes with Peanuts

Cut cold boiled potatoes in cubes. There should be 3 cups. Heat in 1 cup white sauce, and add $\frac{1}{2}$ cup chopped peanuts. Other nuts may be used if preferred.

Peas in Potato Nests

Make mounds of mashed potatoes on a platter. In center of each mound make a deep indentation, and fill with buttered peas.

Potatoes a la Suisse

Wash and scrub smooth, round, medium-sized potatoes, put in pan, and bake in a moderately hot oven until soft. Remove a slice from each, and scoop out the inside. Mash and season. Put part of the mixture back into the skins, leaving a hollow place in the top of each. Break an egg into each hollow place, return to oven, and bake until eggs are set. Brown mixture left over, and use as a border on serving dish.

Baked Potato Apples

Take $1\frac{1}{2}$ cups hot riced potatoes, yolk $\frac{1}{2}$ egg, 2 tablespoons butter substitute, $\frac{1}{2}$ teaspoon salt, few grains pepper. Mix ingredients and stir until well blended. Shape into forms representing small apples, using 2 tablespoons of mixture to each apple. Arrange on buttered sheet, brush over with remaining yolk of egg diluted with $\frac{1}{2}$ tablespoon cold water, and insert cloves in both stem and blossom ends. Bake in a hot oven until thoroughly heated and glazed.

Potatoes a la Goldenrod

Cut boiled potatoes in cubes. There should be 2 cups. Separate yolks from white of 4 hard-cooked eggs. Chop the whites, and force the yolks through a potato ricer or strainer. Heat potato cubes and chopped whites in $1\frac{1}{2}$ cups white sauce. Sprinkle with yolks and serve.

Chantilly Potatoes

Pile in baking-dish 3 cups well-seasoned mashed potatoes. Beat $\frac{1}{2}$ cup heavy cream until stiff, add $\frac{1}{2}$ cup grated cheese, and season with salt and pepper. Spread over potatoes, place in hot oven, and bake until cheese is melted and cream is delicately browned.

Alphonse Potatoes

Cut 5 medium-sized cold boiled potatoes in cubes. Parboil 6 minutes 1 green pepper from which seeds have been removed. Cut in $\frac{1}{4}$ -inch pieces. Add this to potato cubes with $\frac{1}{2}$ cup milk and $\frac{1}{2}$ teaspoon salt. Let simmer 15 minutes. Put in an oiled baking dish, sprinkle with $\frac{1}{2}$ cup cheese, and bake 10 minutes.

Nut and Potato Croquettes

Take 2 cups hot riced or mashed potatoes, 3 tablespoons cream, $\frac{1}{2}$ teaspoon salt, $\frac{1}{2}$ teaspoon pepper, few grains cayenne, few drops of onion juice, yolk of 1 egg, $\frac{1}{2}$ cup bread crumbs, $\frac{1}{2}$ cup cream, $\frac{1}{2}$ egg-yolk, $\frac{1}{2}$ teaspoon salt, $\frac{1}{2}$ cup chopped nuts. Mix first seven ingredients thoroughly. Cook bread with cream to make a thick paste, and cool. Add the remaining ingredients. Shape potato mixture in nests, fill with nut mixture, cover with potato mixture, roll until of the desired shape, and flatten ends. Dip in crumbs, egg, and crumbs again. Fry in deep fat, and drain on brown paper.

Codfish Balls

Take 2 cups mashed potatoes, 1½ cups shredded codfish (freshened slightly and parboiled until soft), 1 egg, 1 tablespoon butter, 1 tablespoon milk. Other fat may be used. To the mashed potatoes add the codfish, the butter, and the egg. Add the egg well beaten. Drop spoonfuls of the mixture into deep hot fat, frying not more than six or seven balls at a time. Remove one at a time when delicately brown. Drain on glazed paper.

POTATOES SUBSTITUTED FOR PART OF THE FLOUR

The best results are obtained by the use of freshly cooked potatoes that have been forced through a fine strainer. These are more easily mixed with the other ingredients, and give a better flavor than when old left-over potatoes are used.

Potato Biscuit

Take 1 cup mashed potatoes, 1 cup flour, 4 teaspoons baking powder, ½ teaspoon salt, 2 tablespoons fat, about ½ cup milk. Sift dry ingredients. Add these to the potatoes, mixing with a knife. Work the fat into this mixture evenly. Add gradually milk enough to make a soft dough. Turn out on a floured board, pat and roll out lightly to ¼ inch in thickness. Cut out biscuits, on oiled sheet or pan, and bake 12 to 15 minutes in hot oven.

Potato Dumplings

Take 1 cup potatoes, 1 cup flour, ½ teaspoon salt, 2 teaspoons fat, about ½ cup milk, 4 teaspoons baking powder. Mix according to directions given for mix and drop from spoon. Place the dumplings loosely in a buttered steamer. Place the steamer over boiling water, cover it closely, and steam the dumplings from 12 to 15 minutes. They may be steamed by placing on top of other boiling meat.

Potato Muffins

Take 4 tablespoons fat, 4 tablespoons sugar, 1 egg, 1 cup mashed potatoes, 1 cup flour, 4 teaspoons baking powder, salt, 1 cup milk. Cream the fat and sugar. Add the egg well beaten, then the potatoes, and mix thoroughly. Sift salt and baking powder together, and add to the mixture alternately with the milk. Bake in oiled gem-pans or muffin-tins from 25 to 30 minutes.

Potato Rolls

Take 2 cups mashed potatoes, 1 tablespoon fat, 2 tablespoons sugar, 1 egg, 1 cup milk, 1 cake yeast, flour enough to make stiff. To the hot potatoes add the sugar, and the salt. When the mixture is cool, add the egg and the flour in which the yeast cake has been dissolved. Beat the mixture well, then add enough flour to make a soft dough. Put the dough to rise in an oiled bowl. When it has doubled its bulk, turn it out on a floured board, and roll it into a ¼ inch thick. Cut it into shapes with a biscuit cutter. Brush them with melted fat, and fold them over like Parker-House rolls. Place the rolls on an oiled pan, let them rise, and bake in a quick oven.

Potato Yeast Bread I

Take 2 cups mashed potatoes, 1 tablespoon fat, 1 tablespoon sugar, 1 cupful milk, 1 cake yeast, flour enough to make stiff. Mix the ingredients according to directions given for rolls. After the first rising shape into loaves. Let rise until to double their bulk, and bake 45 to 60 minutes.

Potato Yeast Bread II (Makes 3 loaves of bread)

Take ½ cup milk or milk and water mixed, 4 tablespoons sugar, 4 tablespoons salt, 4 cups mashed potatoes, 8 cups flour, ½ cake compressed yeast, ½ cup warm water. Scald liquid, if milk is used. Pour it over fat, sugar, and salt. Cool, add yeast, moistened in ½ cup warm water. Add potatoes and flour, and knead well. Let rise until double its bulk. Shape into loaves, and let rise again until double its bulk. Bake 45 minutes to 1 hour.

Potatoes in Meat Loaf

Boiled or mashed potatoes may be very satisfactorily substituted for part or all of the bread crumbs generally used in meat loaf.

Potato Crust for Meat Pie

Mix 1 tablespoon of shortening with 1 cup mashed potatoes, 8 or 10 tablespoons of flour, 1 teaspoon baking powder, and water enough to make the dough roll easily. Cover meat pie with this, and bake 20 minutes in a hot oven.

Potato Doughnuts

Take 4 tablespoons fat, 1 cup sugar, 2 eggs, 1 cup mashed potatoes, 1 cup milk, 3 teaspoons baking powder, spices if desired, flour enough to make a soft dough. Melt the fat, add sugar, eggs, and potatoes. Add milk and sift in the dry ingredients. Turn the dough out on a floured board. Pat and roll it into a sheet $\frac{1}{2}$ inch thick. Cut out rings with a doughnut cutter, and fry them in deep fat.

DESSERTS MADE WITH POTATOES

Potato Custard

Take 2 good-sized cold boiled potatoes, 3 eggs, 2 tablespoons butter, 1 teaspoon cinnamon, 2 cups milk, $\frac{1}{2}$ cup of sugar. Grate the potatoes. Beat the butter, sugar, and the yolks of eggs until very light. Add the potatoes by degrees, stirring all the while, then add the other ingredients. Bake 30 minutes. Beat egg-whites until stiff. Add 2 tablespoons of powdered sugar. Heap this over the top of the custard, and brown in the oven.

Potato Pudding

Take 5 small potatoes, 4 tablespoons of fat, 2 eggs, $\frac{1}{2}$ cup milk, $\frac{1}{4}$ teaspoon salt, $\frac{1}{2}$ lemon (juice and rind), 1 tablespoon sugar, $\frac{1}{2}$ cup raisins or raisins and nuts. Boil potatoes, mash, and add fat, eggs, milk, lemon juice, grated peel, and sugar. Beat well and bake in a buttered dish for 45 minutes or more. Serve with lemon sauce.

Lemon Sauce

Take $\frac{1}{2}$ cup sugar, 2 tablespoons butter, 1 tablespoon flour or corn-starch, 2 tablespoons lemon juice, 1 cup boiling water, nutmeg. Blend sugar, butter, and flour, and add the boiling water gradually. Boil 5 minutes, add lemon juice and a few grains of nutmeg, if desired.

STATE OF NEVADA

ANNUAL INSURANCE REPORT

Summary of the financial condition
on December 31, 1917, and business
for the year of all Insurance Com-
panies authorized to transact busi-
ness in Nevada during 1918, also

List of Licensed Insurance Agents, 1918

Compiled May 1, 1918 .

BY

GEO. A. COLE

State Controller and ex officio Insurance Commissioner

WM. O'LEARY, Deputy



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT

1918



REPORT OF INSURANCE COMMISSIONER

TO HON. EMMET D. BOYLE, *Governor of Nevada*:

The following statement, showing financial condition on December 31, 1917, and business for the year, of all insurance companies authorized to transact business in Nevada during 1918, with a list of all licensed insurance agents, is respectfully submitted.

Geo. A. Cole

State Controller and ex officio Insurance Commissioner.

FIRE INSURANCE COMPANIES

Company	Financial condition				Nevada business			
	Paid-up capital, or statutory deposit	Gross assets	Liabilities, except capital	Net surplus	Risks written	Premiums received	Losses incurred	Losses paid
Aetna, Hartford, Conn.....	\$5,000,000.00	\$29,882,135.82	\$16,390,218.13	\$8,541,967.69	\$985,840.00	\$23,832.94	\$7,962.97	\$12,107.24
Agricultural, Watertown, New York.....	500,000.00	5,574,008.60	3,173,025.51	1,900,983.09	295,000.00	5,082.77	299.00	405.00
Alliance, Philadelphia, Pa.....	750,000.00	3,365,024.63	1,865,024.63	1,700,000.00	82,475.00	1,954.00	485.00	98.00
American Central, St. Louis, Mo.....	1,000,000.00	2,273,809.11	2,167,806.88	1,106,002.23	40,352.00	1,433.64	493.27	520.89
Atlas, Ltd., London.....	200,000.00	3,433,839.30	2,361,411.84	872,427.46	311,161.00	7,188.70	1,067.90	2,616.90
American Alliance, New York.....	1,000,000.00	2,716,144.89	773,832.73	942,312.16	25,867.00	571.17	33.63	33.63
Caledonian, Edinburgh, Scotland.....	200,000.00	2,565,786.38	1,870,370.91	495,415.47	101,647.00	2,299.58	38.63	38.63
California, San Francisco, Cal.....	400,000.00	1,551,850.16	737,139.13	414,251.03	967,575.00	23,511.74	5,173.54	5,784.44
Citizens, St. Louis, Mo.....	200,000.00	1,096,824.03	616,822.23	279,861.80	88,845.00	1,766.03	1,039.50	1,083.23
Commercial Union, Ltd., London.....	200,000.00	11,647,743.42	8,708,982.65	2,741,900.77	8,487,488.00	14,028.54	11,524.03	11,480.90
Concordia, Milwaukee, Wisconsin.....	750,000.00	3,115,504.64	2,009,130.30	856,374.34	75,200.00	1,982.90	11.40	58.60
Connecticut, Hartford, Conn.....	1,000,000.00	8,414,874.03	5,442,172.50	1,972,701.53	378,451.00	8,741.35	3,088.62	1,738.62
Continental, New York.....	10,000,000.00	32,680,654.08	13,815,983.56	8,774,730.82	453,689.00	9,155.72	214.18	154.18
Delaware Underwriters, New York.....	1,000,000.00	7,978,373.69	5,439,159.99	1,539,213.70	130,786.00	3,140.56	1,134.26	1,155.17
Detroit Fire and Marine, Detroit, Mich.....	500,000.00	2,691,646.81	1,040,440.61	1,151,206.20	124,746.00	2,418.93	1,094.06	179.06
Eagle Fire Insurance, Newark, N. J.....	250,000.00	732,642.74	360,669.07	121,973.67	24,159.00	448.00	921.24	897.17
Eagle and British Dominions, Ltd., London.....	300,000.00	1,160,169.10	476,335.97	383,833.13	16,650.00	230.09	9.48	9.48
Fidelity-Phoenix, New York.....	2,500,000.00	18,980,315.30	11,297,797.41	5,182,517.89	176,141.00	3,699.52	218.12	168.12
Fire Association, Philadelphia, Pa.....	1,000,000.00	12,216,631.69	7,769,046.19	3,457,586.40	702,778.00	17,466.81	2,467.86	2,588.25
Fireman's Fund, San Francisco, Cal.....	1,500,000.00	16,719,842.62	11,387,917.88	3,881,924.74	2,296,085.00	19,183.69	5,892.79	7,903.29
Fire Reassurance, Paris, France.....	200,000.00	2,357,430.92	1,775,747.98	381,682.98	35,549.00	1,107.15	255.84	422.84
First Reinsurance, Hartford, Conn.....	500,000.00	2,136,902.75	1,331,124.20	305,778.55	880.00	40.03	-----	4,430.63
First Russian, Petrograd, Russia.....	200,000.00	2,223,642.15	1,690,862.17	332,779.98	69,582.00	1,791.41	288.56	477.56
Great American, New York.....	2,000,000.00	23,454,989.22	12,927,269.91	8,527,719.31	430,112.00	10,625.98	2,247.73	2,122.73
Great American, Rochester Department, N. Y.....	2,000,000.00	23,454,989.22	12,927,269.91	8,527,719.31	56,776.00	1,748.36	230.78	230.78
Globe and Rutgers, New York.....	700,000.00	22,022,227.19	13,896,112.93	7,486,114.26	274,936.00	6,294.69	500.91	500.91
Guardian, Salt Lake City, Utah.....	200,250.00	552,703.98	187,195.04	165,258.94	23,821.00	625.74	500.30	500.30

FIRE INSURANCE COMPANIES—Continued

Company	Financial condition				Nevada business			
	Paid-up capital, or statutory deposit	Gross assets	Liabilities, except capital	Net surplus	Risks written	Premiums received	Losses incurred	Losses paid
Palatine Ltd., London	\$200,000.00	\$3,596,907.51	\$2,498,562.00	\$898,255.51	\$208,264.00	\$4,587.65	\$9,616.37	\$4,153.66
Paternelle Paris, France	200,000.00	1,033,443.71	1,051,094.26	382,349.45	190,442.00	4,482.87	1,030.54	9,590.54
Patriote, Ltd., Dublin	200,000.00	653,633.83	1,051,094.26	382,349.45	44,250.00	1,089.70	1,030.16	1,108.16
Philadelphia, Philadelphia	750,000.00	8,084,933.64	5,734,653.34	1,670,275.30	529,102.00	8,142.17	1,524.13	2,040.87
Philadelphia Underwriters, Philadelphia	5,000,000.00	40,789,657.48	27,262,071.08	8,457,586.40	376,254.00	8,365.66	2,041.10	2,040.86
Phoenix Assurance Ltd., London	200,000.00	4,393,134.47	3,149,131.14	1,853,955.33	297,182.00	5,322.47	1,463.63	1,463.63
Phoenix Hartford, Conn.	3,000,000.00	13,040,850.09	8,181,809.30	6,859,040.79	269,607.00	5,970.01	2,593.86	4,868.86
Providence Washington, Providence, R. I.	1,000,000.00	6,812,150.50	4,034,836.91	1,777,313.59	67,764.00	1,090.41	86.11	233.34
Queen, New York	2,000,000.00	13,422,862.51	7,190,793.64	4,232,068.87	1,034,632.00	24,732.32	5,242.33	6,038.73
Rosita, Petrograd, Russia	200,000.00	9,656,113.27	7,374,518.63	2,081,594.64	112,169.00	3,719.40	734.63	1,362.63
Royal Ltd., Liverpool	662,000.00	16,475,925.47	12,066,966.53	3,726,958.94	1,629,083.00	33,956.16	9,497.49	10,828.74
Russia Reinsurance, Petrograd, Russia	200,000.00	2,428,427.37	1,791,136.19	437,291.18	123,181.00	3,780.71	660.28	1,262.28
Salamandra, Petrograd, Russia	200,000.00	4,078,103.73	3,611,617.37	266,486.36	172,945.00	2,839.96	5,345.85	1,816.10
St. Paul Fire and Marine, St. Paul, Minn.	1,000,000.00	13,577,620.80	8,680,495.31	3,997,135.49	395,251.00	6,860.31	3,253.39	3,296.94
Scottish Union and National, Edinburgh	200,000.00	7,536,675.65	3,604,172.80	3,732,502.85	195,844.00	4,738.34	1,591.90	1,591.90
Skandia, Stockholm, Sweden	330,000.00	1,864,518.12	1,103,182.77	431,335.35	190,442.00	4,432.37	3,034.26	3,399.26
Skandinaviska Reinsurance, Copenhagen	400,000.00	2,038,707.58	1,110,846.28	527,859.30	40,822.00	612.04	23.98	18.96
Springfield Fire and Marine, Springfield, Mass.	2,500,000.00	13,224,033.34	8,198,313.46	2,525,719.88	546,304.37	15,914.10	8,057.45	8,489.80
Sun Insurance Office, London	200,000.00	5,306,790.26	3,686,956.47	1,509,833.79	411,541.00	9,906.64	5,924.61	5,924.61
Svea, Gothenburg, Sweden	200,000.00	2,218,018.95	1,313,457.90	704,561.05	229,056.00	6,771.26	57.80	1,110.25
Swiss National, Ltd., Basle, Switzerland	200,000.00	2,670,744.98	2,262,822.99	297,786.99	109,270.00	2,419.01	214.50	323.50
Swiss Reinsurance, Zurich, Switzerland	200,000.00	1,745,006.02	1,064,248.14	460,757.88	162,156.00	3,303.18	965.55	1,540.55
Second Russian, Petrograd, Russia	222,000.00	1,656,183.74	1,300,169.32	134,014.42	62,890.00	1,032.71	1,990.90	1,660.39
Sterling, Indianapolis, Ind.	850,000.00	1,810,347.51	531,346.35	429,001.15				
Union Assurance Society Ltd., London	200,000.00	1,944,886.20	908,718.05	836,168.15	154,116.00	3,636.15	6,430.47	6,430.47
Union and Phenix Espanol, Madrid, Spain	200,000.00	2,064,625.00	1,658,938.00	206,687.00	233,432.00	5,452.69	1,793.25	2,452.25
United States, New York	1,400,000.00	7,525,508.76	4,437,143.06	1,688,365.70	47,690.00	632.83	116.01	1,258.01

Vulcan, Oakland, Cal.	500,000.00	1,148,161.02	238,471.00	409,689.43	118,768.00	9,019.08	661.43	578.51
Waraw, Warsaw, Russia	200,000.00	1,080,077.68	683,692.01	146,186.67	106,111.00	2,310.41	308.89	578.80
Worcester, New York	200,000.00	7,978,378.60	5,430,159.90	1,530,213.70	208,530.00	4,159.17	3,461.04	1,968.60
Western Assurance, Toronto, Canada	1,000,000.00	4,194,579.34	2,528,887.55	1,267,661.60	208,121.00	3,570.80	493.81	518.17
Totals	800,000.00	7,388,869,508.67	8,453,403,135.40	3,188,769,817.87	537,561,422.49	9,618,463.48	4,204,725.33	8,227,276.62

LIFE INSURANCE COMPANIES

Company	Financial condition				Nevada business				
	Paid-up capital, or statutory deposit	Gross assets	Liabilities except capital	Net surplus	Risks written	Premiums received	Losses incurred	Losses paid	Insurance in force
Bankers Reserve, Omaha, Nebraska	\$100,000.00	\$7,385,557.68	\$6,016,901.19	\$1,268,656.49	\$189.00	\$625.33			\$17,619.00
Beneficial, Salt Lake City, Utah	200,000.00	2,160,559.32	1,848,112.11	112,447.21	107,270.00	8,462.16	\$1,000.00	\$1,000.00	227,185.00
California State, Sacramento, Cal.	500,000.00	2,442,858.80	1,721,981.61	290,877.19	110,500.00	21,438.35			586,231.00
Capitol, Denver, Colorado	100,000.00	2,486,865.53	2,225,484.32	120,881.21	13,486.00				94,733.00
Columbian National, Boston, Mass.	1,000,000.00	13,944,062.13	12,415,460.17	598,581.96	52,000.00	9,454.89			274,574.00
Continental, Salt Lake City, Utah	208,875.00	2,069,432.43	1,790,869.50	89,707.93	52,000.00	18,491.13	4,084.00	6,084.00	552,676.00
Equitable Life Assurance Society, N.Y.	100,000.00	576,837,943.63	565,092,085.33	11,645,258.30	62,500.00	41,994.45	17,800.00	17,800.00	1,534,586.00
Home, New York		34,542,304.08	33,029,866.15	1,512,447.93	5,744.41	4,153.39	730.41	730.41	79,608.00
Idaho State, Boise, Idaho	200,000.00	823,736.00	599,483.43	21,252.57	5,000.00	1,594.55			66,580.00
Kansas City, Kansas City, Mo.	100,000.00	8,742,726.52	8,310,963.36	331,763.16	169,000.00	24,723.54	6,000.00	6,000.00	795,208.00
Missouri State, St. Louis, Mo.	1,000,000.00	17,025,067.71	14,657,522.19	1,367,545.52	8,604.69	6,291.66			143,903.94
Mutual Life, New York		633,990,569.37	633,999,569.37		595,992.00	124,960.87	69,010.00	78,010.00	3,324,543.00
Mutual Benefit, Newark, N. J.		219,378,734.46	219,378,734.46		19,641.00	4,275.95	4,000.00	4,000.00	177,229.00
National, Chicago, Ill.	500,000.00	15,260,229.79	14,441,632.93	318,596.86	3,000.00	226.86			15,000.00
Nevada State, Reno, Nevada	231,238.53	22,803.72	203,684.25		196,000.00	8,098.88			196,000.00
New York, New York	64,750.56	934,929,381.52	934,929,381.52		852,751.00	251,266.06	65,681.00	68,633.00	7,768,275.00
Northwestern Mutual, Milwaukee, Wis.		393,533,923.60	373,844,491.04	19,689,432.56	320,700.00	33,341.00		1,055.00	1,513,156.00
Occidental, Los Angeles, Cal.	250,000.00	1,817,013.31	1,498,063.87	68,949.44	5,500.00	8,066.44	1,000.00	1,000.00	331,430.00
Pacific Mutual, Los Angeles, Cal.	1,000,000.00	39,646,908.97	38,603,567.29	43,341.68	18,853.00	19,743.55	5,999.00	5,999.00	578,081.00
Penn Mutual, Philadelphia, Pa.		183,090,500.30	183,090,500.30		225,692.00	32,727.91	9,000.00	9,000.00	892,006.00
Reliance, Pittsburg, Pa.	1,000,000.00	7,550,502.37	6,244,620.48	305,881.89	2,000.00	1,902.27			55,500.00

Cooper, Edgar J.	Yerington
Davis, Jas. T.	Carson City
Douglas County Farmers Bank	Gardnerville
Ely Securities Co.	East Ely
Erickson, C. F.	Lovelock
Goodin & Twigg	Lovelock
Jarrett, A. W. & Co.	Deeth
Lander County Bank	Austin
Lee & Franks	Pioche
Lequire, A. D., & Sons	Battle Mountain
Leonard, Jas. M.	Virginia City
Lillis, Henry M.	Las Vegas
Lockhart, J. M.	Ely
Losee, Isaac E.	Overton
Lothrop, John	Dayton
Mason Valley Insurance Agency	Mason
Reading, A. G.	Wellington
Russell, Geo., Co.	Elko
Sheehan, J.	Winnemucca
Skillman, E. A.	Eureka
Southern Nevada Abstract Co.	Tonopah
Sprague, Floyd R.	McDermitt
Steele, Geo. A.	Fernley
Summerfield, S. M.	Mina
Whitmore, W. S.	Midas

Russian Reinsurance Company:

T. R. Hofer, Attorney in Fact, Reno

Salamandra Insurance Company:

Wm. McKnight, Attorney in Fact, Carson City

Scottish Union & National Insurance Company:

F. L. Wildes, Attorney in Fact, Carson City

Creelman, W. F.	Reno
Douglas County Farmers Bank	Gardnerville
Ely Investment Co.	Ely
Fairchild, M. D.	Reno
Henderson, Hayden	Elko
Henderson, John	Elko
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Poole, J. D.	Sparks
Quigley, I. M.	Golconda
Raycraft, A. G.	Tonopah
Reinhart, E. & Co.	Golconda
Washoe County Bank	Reno
Winnemucca State Bank & Trust Co.	Winnemucca

Second Russian Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Skandia Insurance Company:

T. R. Hofer, Attorney in Fact, Reno

Skandinavia Reinsurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Springfield Fire & Marine Insurance Company:

A. C. Helmold, Attorney in Fact, Reno

Bank of Nevada Savings and Trust Co.	Reno
Beard, F. L.	Goldfield
Buol, Peter	Las Vegas
Churchill County Bank	Fallon
Cooper, E. J.	Yerington
Davis, Jas. T.	Carson City
Harris, W. S.	Battle Mountain
Henderson, John	Elko
Lee & Franks	Pioche
Leonard, Jas. M.	Virginia City
Lockhart, H. M.	Ely
Miller, B. F., Jr.	Searchlight
Riley, M. M.	Las Vegas
Sheehan, J.	Winnemucca
Southern Nevada Abstract Co.	Millers
Southern Nevada Abstract Co.	Tonopah
Young, S. R.	Lovelock

Sterling Fire Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

St. Paul Fire & Marine Insurance Company:

F. J. Peck, Attorney in Fact, Reno

Farmers Bank of Carson Valley.....	Minden
Goodin & Twigg.....	Lovelock
Gray, George.....	San Francisco, Cal.
Henderson, John.....	Elko
Holland, Jas. F.....	Lamoille
McKnight, Wm.....	Carson City
Mulcahy, H. C.....	Sparks
Raycraft, A. G.....	Tonopah
Steptoe Agency Co.....	Ely
Washoe County Bank.....	Reno
Way, C. M.....	Fallon
Whitney, Mae.....	Reno
Winnemucca State Bank & Trust Co.....	Winnemucca

Sun Insurance Office:

C. H. Peters, Attorney in Fact, Carson City

Bank of Nevada Savings & Trust Co.....	Reno
Churchill County Bank.....	Fallon
Cook, John S., & Co.....	Goldfield
Henderson, John.....	Elko
Leonard, Jas. M.....	Virginia City
Limbaugh, F. A.....	Battle Mountain
Lockhart, J. M.....	Ely
Mills, Geo. T.....	Carson City
Moore, S. R., & Co.....	Tonopah
Peters, C. H.....	Carson City
Southern Nevada Abstract Co.....	Tonopah
Winnemucca State Bank & Trust Co.....	Winnemucca

Svea Insurance Company:

R. C. Moore, Attorney in Fact, Reno

Cook, John S., & Co.....	Goldfield
Davidson, Mrs. Josie L.....	Yerington
Farmers Bank of Carson Valley.....	Minden
Henderson, John.....	Elko
Kappler, E. E.....	Carlin
Leonard, Jas. M.....	Virginia City
Lockhart, J. M.....	Ely
Lothrop, John.....	Dayton
Moore, S. R., & Co.....	Tonopah
Sheehan, J.....	Winnemucca
Washoe County Bank.....	Reno

Swiss National Insurance Company, Ltd.:

C. H. Peters, Attorney in Fact, Carson City

Swiss Reinsurance Company:

C. H. Peters, Attorney in Fact, Carson City

Union Assurance Society, Ltd.:

C. R. Carter, Attorney in Fact, Reno

Cook, John S., & Co.....	Goldfield
Creelman, W. F.....	Reno
Douglas County Farmers Bank.....	Gardnerville
Ely Investment Co.....	Ely
Henderson, John.....	Elko
Jones, Thos. A.....	Fallon
Leonard, Jas. M.....	Carson City
Leonard, Jas. M.....	Virginia City
Lovelock Mercantile Co.....	Lovelock
Moore, S. R., & Co.....	Tonopah
Riley, M. M.....	Las Vegas
Southern Nevada Abstract Co.....	Millers
Washoe County Bank.....	Reno
Whitacre, E. H., Land & Title Co.....	Yerington
Winnemucca State Bank & Trust Co.....	Winnemucca

Union & Phenix Espanol Insurance Company:

Jas. T. Davis, Attorney in Fact, Carson City

United States Fire Insurance Company:

State Agent & Transfer Syndicate, Attorney in Fact, Carson City

Way, C. M.....	Fallon
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Vulcan Fire Insurance Company:

Wm. McKnight, Attorney in Fact, Carson City

Washoe County Bank.....Reno

Warsaw Fire Insurance Company:

Jas. T. Davis, Attorney in Fact, Carson City

Westchester Fire Insurance Company:

Geo. S. Hall, Attorney in Fact, Reno

Barlow, A. H.....	Mason
Byington & Hall.....	Reno
Cook, John S., & Co.....	Goldfield
Henderson, John.....	Elko
Kromer, J. W.....	Lovelock
Leonard, Jas. M.....	Virginia City
Lockhart, J. M.....	Ely
Peters, C. H.....	Carson City
Poole, J. D.....	Sparks
Raycraft, A. G.....	Tonopah
Sheehan, J.....	Winnemucca
Way, C. M.....	Fallon
Woodard, H. J.....	Las Vegas

Western Assurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Atkinson, H. H.....	Tonopah
Cook, John S., & Co.....	Goldfield
Read, John T.....	Reno
Reinhart, E., & Co.....	Winnemucca

AGENTS OF LIFE INSURANCE COMPANIES

Bankers Reserve Life Insurance Company:

J. Eggers, Attorney in Fact, Reno

Hurlburt, J. J.....Las Vegas

Beneficial Life Insurance Company:

N. J. Wadsworth, Attorney in Fact, Panaca

California State Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Tobin, C. L.....Winnemucca

Capitol Life Insurance Company:

F. M. Raiff, Attorney in Fact, Reno

Columbian National Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Hardy, Edwin A.....	Las Vegas
Wright, A. W.....	Salt Lake City, Utah

Continental Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Starr, C. A.....Reno

Equitable Life Assurance Society:

Albert T. Donnels, Attorney in Fact, Reno

Bruce, George W.....	Elko
Carroll, Jas. J.....	Salt Lake City, Utah
Henrichs, Walter E.....	Ruth
Horne, John F.....	McGill
Merrill, Wm. B.....	Salt Lake City, Utah
North, Richard C.....	McGill
Strassburg, Fred P.....	Fallon
Templeman, Frank.....	Elko

Home Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Tobin, I. Quimbey.....Salt Lake City, Utah

Idaho State Life Insurance Company:

Insurance Commissioner of Nevada, Attorney in Fact,
Carson City

Starr, Antoinette..... Carson City
Webb, T. J. Winnemucca

Kansas City Life Insurance Company:

W. H. Simmons, Attorney in Fact, Reno

Flowers, W. J. Overton
Franks, John H. Pioche
Hunter, W. G. Salt Lake City, Utah
Im Obersteg, Sarah Caliente
Johnson, H. H. Las Vegas
Milne, E. J. Elko
Rhodes, E. J. Salt Lake City, Utah
Woodard, H. J. Las Vegas

Missouri State Life Insurance Company:

J. Eggers, Attorney in Fact, Reno

Cotterell, C. J. Salt Lake City, Utah
Cotterell, S. A. Salt Lake City, Utah
McLaughlin, J. E. Tonopah

Mutual Benefit Life Insurance Company:

John W. Eckley, Attorney in Fact, Virginia City

Robinson, Geo. W. Reno
Stiles, Geo. R. San Francisco, Cal.
von Rolf, Thankmar Los Angeles, Cal.

Mutual Life Insurance Company:

G. M. Sterud, Attorney in Fact, Reno

Beauport, J. E. Mason
Biggane, J. W. Ely
Cavanaugh, F. J. Tonopah
Davis, Wm. H. H. Aurora
Doughty, J. C. Elko
Flamm, T. D. Winnemucca
Hillman, Horace P. Sparks
Jensen, A. Gardnerville
Lawrence, C. T. Manhattan
Leonard, Jas. M. Virginia City
Lipman, J. A. Reno
McAndrews, Alice Reno
Moore, J. G. Winnemucca
Peters, C. H. Carson City
Sterud, J. M. Reno
Strassburg, F. P. Fallon
Wennhold, W. H. Minden

National Life Insurance Company:

Insurance Commissioner of Nevada, Attorney in Fact,
Carson City

Holland, H. K. Reno
Larson, J. Th. Reno
Landon, Al. Reno
Templeman, Frank Elko
Welton, O. Reno

Nevada State Life Insurance Company:

Atwood, P. R. Reno
Bank of Wells Wells
Benedetti, Amerigo Lovelock
Bidleman, H. J. Reno
Coogan, Harry J. Carson City
Crosby, A. C. Reno
Harris, W. S. Reno
Jones, C. P. Reno
Jones, Thos. A. Fallon
Linney, W. B. Reno
McBride, Allen G. Elko
McCaffrey, W. M. Reno
Reading, Wm. F. Wellington
Richardson, J. H. Fallon

New York Life Insurance Company:

A. P. Ruch, Attorney in Fact, Reno

Albert, Herman W.	Tonopah
Clemons, John C.	Luning
Davidson, Josie L.	Yerington
Jensen, Geo. P.	McGill
Kasai, Henry Y.	Salt Lake City, Utah
Krenkle, Frank C.	Winnemucca
Laden, Geo.	Reno
Ligon, William B.	Carson City
Madigan, William D.	Reno
Marine, Rufus Howard	Goldfield
McGrath, M. E.	Reno
North, Miles E.	Reno
Osborne, Isabel	Pioche
Reynolds, A. E.	East Auburn, Cal.
Swartz, Geo. L.	Elko
Taylor, Paul Wesley	Westwood, Cal.
Urchida, U.	Reno
Wallace, Jas. D.	Ely
Warran, Lane K.	Elko
Way, C. M.	Fallon
Wood, Harry B.	Reno

Northwestern Mutual Life Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Aldrich, Carlos J.	Las Vegas
Hawse, Jasper H.	McGill
Hoffner, Benj. J.	Ely
Ramsay, Edwin J.	Tonopah
Ringle, H. E.	Reno
Robison, Geo. W.	Reno
Shell, Arthur A.	Ruth
Stebenne, Arthur J.	Las Vegas
Walter, Wallace A.	Reno
West, Geo. F.	Yerington
von Rolf, Th.	Los Angeles, Cal.

Occidental Life Insurance Company:

Walter B. Linney, Attorney in Fact, Las Vegas

Linney, W. B.	Las Vegas
Moore, S. R., & Co.	Tonopah
Richardson, J. H.	Las Vegas

Pacific Mutual Life Insurance Company:

T. R. Hofer, Attorney in Fact, Reno

All, William P.	Las Vegas
Bourne, T. J.	Los Angeles, Cal.
Leoncio, C. J.	Reno
Long, Levi	Ogden, Utah
McCubbin, Stanley H.	Salt Lake City, Utah
Vette, Victor C.	Salt Lake City, Utah

Penn Mutual Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Tholl, Paul N. A.	Sparks
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Reliance Life Insurance Company:

J. H. Evans, Attorney in Fact, Reno

Travelers Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Born, Paul E.	Winnemucca
Cullen, Jesse J.	Elko
Footo, Edward	Goldfield
Hannibal, Hardy W.	Hazen
Heaton, John M.	Las Vegas
Matheson, John	Virginia City
Peck, John E.	Tonopah
Reynolds, A. E.	Auburn, Cal.
Reynolds, Leslie H.	Auburn, Cal.
Smith, John E.	Reno
Spriggs, E. B.	McGill
Yetter, Henry J.	Fallon

Union Mutual Life Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Gavin, Geo. E. Imlay

West Coast-San Francisco Life Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Bailey, R. D. Colton, Cal.
Cramer, Edwin Colton, Cal.**Western States Life Insurance Company:**

Geo. A. Cole, Attorney in Fact, Carson City

Christensen, Geo. A. Kemmerer, Wye
Curns, R. M. Reno
Horne, John F. McGill

**AGENTS OF FIDELITY, SURETY, CASUALTY, ETC.,
COMPANIES**

Etna Casualty and Surety Company:

Wm. McKnight, Attorney in Fact, Carson City

First National Bank Elko
Moore, S. R., & Co. Tonopah**American Indemnity Company:**

Geo. A. Cole, Attorney in Fact, Carson City

Sanford, Geo. L. Carson City

American Surety Company:

State Controller of Nevada, Attorney in Fact, Carson City

Ayers, Albert D. Reno
Baker, Frank E. Lovelock
Beard, F. L. Goldfield
Biggs, J. W. Ely
Byington & Hall Reno
Campbell, L. G. Winnemucca
Cann, E. H. Fallon
Carroll, J. J. McGill
Culbertson, H. W. Mason
Curier, B. F. Elko
Flowers, W. J. Overton
Keith, Geo. W. Carson City
Lawrence, C. T. Manhattan
Lockhart, J. M. Ely
Maestretti, A. J. Austin
Moore, S. R., & Co. Tonopah
Plummer, Edna C. Palisade
Reinhart, Moses Winnemucca
Riley, M. M. Las Vegas
Scott, John W. Carlin
Sheehan, J. Winnemucca**Continental Casualty Company:**

State Controller of Nevada, Attorney in Fact, Carson City

Carroll, J. J. Ely
Ferree, V. M. Reno
Hamilton, Louis Las Vegas
McMillan, M. P. Ely
Stotesbury, J. H. Reno
Thurman, W. J. Ruth**Employers' Liability Assurance Corporation, Ltd.:**

T. B. Hofer, Attorney in Fact, Reno

McAndrews, Alice M. Reno
Steptoe Agency Co. Ely**Fidelity & Deposit Company of Maryland:**

State Controller of Nevada, Attorney in Fact, Carson City

Sessions & Clement Reno
Steptoe Agency Co. Ely
Title Guarantee & Trust Co. Elko

Hartford Accident & Indemnity Company:

Geo. A. Cole, Attorney in Fact, Carson City

Burton, C. F.	Reno
Hardin, Dr. F. A.	Fallon
Southern Nevada Abstract Co.	Tonopah
Winnemucca State Bank & Trust Co.	Winnemucca

Hartford Steam Boiler Inspection & Insurance Company:

F. J. Peck, Attorney in Fact, Reno

Peck & Sample Co.	Reno
Scheeline Banking and Trust Co.	Reno

Lloyds Plate Glass Insurance Company:

Lee J. Davis, Attorney in Fact, Reno

Cooper, E. J.	Yerington
Goodin & Twigg	Lovelock
Gray, George	San Francisco, Cal.
Henderson, John	Elko
McKnight, William	Carson City
Mulcahy, H. C.	Sparks
Peck & Sample Co.	Reno
Steppe Agency Co.	Ely
Washoe County Bank	Reno
Winnemucca State Bank & Trust Co.	Winnemucca

Maryland Casualty Company:

J. Eggers, Attorney in Fact, Reno

Byington & Hall	Reno
Peck & Sample Co.	Reno
Sessions & Clement	Reno
Stotesbury, J. H.	Reno

Massachusetts Bonding & Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Callahan & Brandon	Winnemucca
Goodman, B. B.	Lovelock
Hillman, H. P.	Reno
Title Guarantee & Trust Co.	Elko
Young, Harley	Las Vegas

National Casualty Company:

State Controller of Nevada, Attorney in Fact, Carson City

Flamm, J. B.	Reno
Hollingsworth, R. L.	McGill
Johnson, Leon	Reno
Rees, John T.	McDermitt
Wilkinson, John	Las Vegas
Woodard, H. J.	Las Vegas

National Surety Company:

State Controller of Nevada, Attorney in Fact, Carson City

Abernethy, J. C.	Golconda
Adams, W. G.	Battle Mountain
Batt, Mels S.	Wells
Baker, B. J.	Goldfield
Dyer, H. W.	Austin
Franks, George W.	Pioche
Gardiner, W. M.	Reno
Goodin, Jas. T.	Lovelock
Grob, Fred	Fallon
Henderson, John	Elko
Highland, R. J.	Millers
Leonard, Jas. M.	Virginia City
Marsh, H. G.	Minden
McKnight, Wm.	Carson City
Miller, J. H.	Hawthorne
Montrose, Geo. A.	Gardnerville
Oldfield, F. D.	Ely
Peck, F. J.	Reno
Ravecraft, A. G.	Tonopah
Skillman, Edward A.	Eureka
Sprague, F. R.	McDermitt
White, J. H.	Hawthorne
Woodard, H. J.	Las Vegas

New York Plate Glass Insurance Company:

F. G. Clement, Attorney in Fact, Reno

Cook, John S., & Co.	Goldfield
Ely Investment Co.	Ely
First National Bank	Winnemucca
Jones, T. A.	Fallon
Moore, S. R. & Co.	Tonopah
Riley, M. M.	Las Vegas
Russell, Geo. Co.	Elko
Sessions & Clement	Reno
Southern Nevada Abstract Co.	Tonopah

North American Accident Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Jensen, George	McGill
Kouffis, Geo. J.	Ruth
Neff, J. S.	Reno
Starr, C. A.	Reno

Standard Accident Insurance Company:

J. M. Morrow, Attorney in Fact, Elko

Giller, T. E.	Winnemucca
Martin, M. J.	Elko
Murphy, C. O.	Goldfield
Shirts, C. H.	Goldfield

United States Casualty Company:

Geo. A. Cole, Attorney in Fact, Carson City

United States Fidelity & Guaranty Company:

J. Eggers, Attorney in Fact, Reno

Cook, John S., & Co.	Goldfield
Douglas County Farmers Bank	Gardnerville
Farmers Bank of Carson Valley	Minden
La Tourette, E. S.	Carson City
Lovelock Mercantile Co.	Lovelock
Mashburn, Gray	Virginia City
Peters, C. H.	Carson City
Robins, C. E.	Winnemucca
Southern Nevada Abstract Co.	Tonopah
Taber, H. S.	Elko
Washoe County Bank	Reno
Way, C. M.	Fallon
Wethers, T. L.	Reno
Whitacre, E. H.	Yerington
Witcher, A. B.	Ely
Woodard, H. J.	Las Vegas

THE SILVER QUESTION

Speech Delivered by

Governor EMMET D. BOYLE of Nevada

At the Conference Held in Denver, Colorado, by the Colorado
Chapter of the American Mining Congress and
the Colorado Metal Miners Association
on January 23, 1918



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : JOE FARNSWORTH, SUPERINTENDENT
1918

GOVERNOR WELLS AND GENTLEMEN OF THE CONFERENCE:

Permit me to express at the outset my appreciation of the invitation extended me by the Colorado Metal Miners' Association and the Colorado Chapter of the American Mining Congress to appear here today and tell you of the recent developments in the silver situation as these have come to my attention.

There is much to be told and in the limits of an address, however protracted, much of interest and much perhaps necessary to a proper understanding of the subject must be omitted. With due formality, however, I will make an effort to lay before you the salient facts which I have secured in an interesting set of negotiations affecting your interests as silver producers.

The war has had a most decided effect upon the price of silver. The average 1913 price was a trifle over 60 cents. The average price for 1914 was a trifle over 55 cents; during the year 1915 the price declined to an average of less than 52 cents. The year 1916 saw it rise to an average of 68 cents and a consistent increment in value continued throughout the first nine months of 1917 until a top price, based on New York market quotations of \$1.12 per ounce, was recorded. As a fact the records of the mint show that during last September as high as \$1.15 $\frac{3}{4}$ per ounce was paid for a considerable purchase of the white metal used for subsidiary coinage by the Government. A few months ago, with the price of their product in the ascendancy, silver producers throughout the world looked with extreme optimism on the future of the metal. Extraordinary demands, apparently originating in all of the belligerent countries and particularly in the Orient, were interpreted as indicating a necessity for more metallic money as a complement to the enormous paper issues made necessary by the war, and it was confidently predicted by economists and students of world finance that silver stood on the threshold of a new era—an era which would see its full money function restored and the arguments of the bimetallists, familiar to us all, so completely justified by the operation of economic laws as to compel general recognition of the fundamental soundness of the principle that silver is entitled to free admission to the mints of the world on its old-time parity with gold.

But a number of things happened in September. The price broke rapidly during that month and fell consistently during October and November until a new low market quotation was established at 83 cents, from which point the price has recovered

only moderately. The suddenness of the break and the absence of satisfactory information as to the reasons which underlay it left the mind of the silver producer in doubt as to what particular agency had been invoked to produce the distressing result which was so seriously affecting and even threatening his industry. It became a matter of common belief that the export embargo placed on gold and silver by proclamation of the President early in September had much to do with the matter. Press reports to the effect that the Treasury Department was negotiating with Mexico for the purchase there of five million ounces of silver were interpreted by others as a scheme on the part of the Government to depress silver prices in order that the usual mint profits on the seigniorage of subsidiary coinage might continue undiminished.

About the middle of November the Associated Press carried advices to the effect that the Government had in contemplation the establishment of a price on silver, with the further intimation that this price would be fixed somewhat below the then existing price of 86 cents per ounce.

Still more or less ignorant of the complexity and the international character of the problem, we continued to entertain the belief that the Government, viewing silver solely as a commodity and without understanding of or sympathy with the problems of the silver miner, was preparing to secure such amounts of the white metal as might be needed for coinage, at the lowest possible price, just as it had secured steel, lead, and copper, after the fixing of prices on these metals, to satisfy its industrial needs in its great work of preparedness for war.

It was known that our own needs for subsidiary coinage had increased and that the Government of the United States was a large buyer. It was observed, likewise, that as a result of conditions, which we did not then fully grasp and which we do not perhaps fully understand today, the tide of silver to the Orient stopped in its flow through the Atlantic ports and established new channels for itself through the Pacific ports. A visit from the Director of the Mint to the western United States assay offices in the fall of 1917 developed the fact that the eastern and British vendors dealing in silver for export had lost control, in part at least, of their erstwhile monopoly, and that silver in the West was demanding a premium over the metal in the East prior to the break. A more or less well-grounded suspicion arose in the minds of many observers of the conditions that these eastern and British gentlemen had a hand in the business. Students of the statistics of production—our own and international—noted that the United States had substantially increased her output of

silver since the outbreak of the European war, but that the world's production had fallen consistently since 1911, when nearly 225,000,000 ounces were added to the world's supply, until 1916, when the production fell short of 157,000,000 ounces. Observers of international trade figures and of the unusual efforts of Great Britain to supplement and protect her gold reserve after her entry into the European conflict—an effort which we are told brought her to the point of substantially subsidizing by pre-war freights and generous exemptions the production of her South African gold mines—saw the new burdens to be placed upon the white metal in the carrying of the world's financial operations. It was known that Mexican production, as a result of disturbed conditions there, had fallen enormously and that the Carranza government had established a very practical form of an export embargo on silver in its pronunciamiento requiring the payment in part with gold for all silver shipped out of that more or less unfriendly nation. It was perhaps known, likewise, that England, alarmed by the drain on her gold reserve by East Indian trade needs, had prohibited the import of gold by that dependency, thus leaving silver, by a process of elimination, as the only medium of exchange to care for the settlement of balances theretofore met by both gold and silver. The sum total of all this—a diminished world supply and an increased world demand—naturally enough left the silver miner in a position where he might, after many years, sit down more or less complacently and with confidence and satisfaction observe the benevolent operation of that law of supply and demand of which the opponents to bimetallism have so consistently prated. I hope to be able to indicate to you in the course of my remarks that, as far as silver is concerned, no such law is permitted to operate, in proof whereof I submit that the Government, as reported in the press in November, did and still does contemplate the fixing of a price on silver, and a price far below that which the metal would demand at this time were it allowed to flow freely in the markets of the world.

It is needless for me to tell you that the announcement of this price-fixing plan, coupled with the inferences and conjectures growing out of the unexplained events which preceded it, left the western metal miner in an unhappy, not to say an embittered, frame of mind. Urgent telegrams of inquiry directed to the Treasury Department were answered in glittering generalities and while gladly testifying now, in the light of disclosures made to us in Washington, to the apparent good faith and sympathy of that branch of the Government, we may still feel that a little initial frankness might have left a friendlier feeling all around.

Now, my own State is one of the foremost in the production of silver. On the price of silver depends the prosperity of entire districts—yes, the very existence of towns and cities which ill-advised or arbitrary action by the Government might wipe out of being overnight. Nevada came into the Union under conditions which properly engage the interest of every student of our romantic western history. Her silver mines, in a former great crisis in our national affairs, played a part which must appeal to the patriotic imagination. The western silver miner, supported by the record, credits himself with substantial contributions to the upbuilding of the Nation. With him the subject has a sentimental aspect little beneath its economic aspect in importance. It was quite rational, therefore, that I should have attempted to bring about concerted action on the part of the Western States looking to the securing of fair treatment for silver from the Government in whatever plans it may have in mind, so I sent out a call, immediately following the publication of the article referred to, for a conference of silver producers in my own State and supplemented this call with a request to the Governors of the other silver-producing States to arrange for similar conferences within their own Commonwealths. The result of this action was a prompt movement in the right direction. A very representative gathering of Nevada silver-producers occurred in Reno on the 22d day of November, and a decision was then reached to send a committee to Washington for the purposes of ascertaining the facts in the matter and of presenting the case of the silver miners to such federal departments as might have jurisdiction.

Subsequently a conference was held in Salt Lake City under the auspices of the American Mining Congress attended by delegates from a number of Western States. This conference augmented the Nevada delegation with a larger committee empowered both to treat in Washington on the silver question and to negotiate with the Treasury Department for needed rulings affecting the application of the War Excess Profits Tax Act to the mining industry. The Nevada committee, fearing that action detrimental to our interests might be taken were we to delay, reached Washington in advance of the delegation from Salt Lake, and on December 3 began negotiations and studies which continued in Washington for nearly a month.

A proper understanding of the elements entering into the problem requires, in advance of the narrative of the actual form taken by our negotiations, that certain controlling factors which affect silver and its price be disclosed to you.

Every war of the past has had its temporary influence on the price of the white metal. The present war requiring, as it has, the expansion of financial transactions to a point where the mind of man cannot adequately grasp the figures, has served to make the metallic money reserves of each of the involved countries a factor in war second only to the factors represented in the manpower and the gun-power of the belligerents.

It seems needless to explain to you the manner in which trade balances between the countries of the world are handled; suffice it to say that the Orient, for many years past, has been showing continually increasing exports, and that all of the Oriental countries, since the outbreak of the European war, have shown trade balances adverse to the allied belligerents. So serious, in fact, did the drain of gold from England become that a prohibition of the import of gold by India was ordered by the mother country in 1917 and a large additional demand for silver was thereby created. This expansion of trade in India created not only the demand for silver to replace gold heretofore used in the settlement of trade balances, but, in addition, for an expanded circulating currency entailing the purchase of large amounts of silver for rupee coinage.

It is no secret that Japan is conducting considerable shipbuilding operations at the expense of the Allies, and that she has acquiesced in the proposition of accepting silver in the settlement of the costs of these operations. China, likewise, has shown an expanding trade and has contributed to the demand for the white metal.

Statistics relative to the world's production of silver for the year 1917 are not available at this time. In the judgment of well-informed persons, it will probably fall considerably short of the production of 1916—the production for that year aggregating something under 157 million ounces for the world.

This production appears to have originated in many countries: North America produces in round numbers 123 million ounces; South America, 12 million ounces; Europe, 9 million ounces; Australia, 4 million ounces; Asia, 5 million ounces; Africa, 1 million ounces.

The North American product representing 78% of the world's supply should be credited on a basis of 74½ million ounces to the United States; 25½ million ounces to Canada, and a trifle under 23 million ounces to Mexico.

The report of the Director of the Mint shows that in 1915 there was used for coinage throughout the world 201,500,000

ounces of silver against a production of 179,000,000 ounces for the world during that year, China alone utilizing for coinage 53% of the total consumption of the world's mints.

In 1916 the world's coinage requirements aggregated 82,000,000 ounces, or 52% of the world's production. Figures for coinage in 1917 are not available, but it is certain that our own mints very largely increased their own production of subsidiary coins and that France and Great Britain, including her dependencies, utilized silver at a greater rate than in the pre-war period.

It is stated that little silver now comes out of South and Central America and Mexico. Certainly, the larger part of the silver produced in Europe remains with the Central Powers. We are therefore in the United States the controlling factor, far and away, in the matter of available production, so a word may not be amiss relative to the normal disposition and origin of our own silver output.

In 1916 the mints of the United States utilized $6\frac{1}{2}$ million ounces in the production of subsidiary coins. Twenty-two million ounces, net, were used in the industrial arts, of which amount, as a matter of passing interest, between four and five million ounces went into moving-picture films. The balance was exported, largely to the Orient.

Of the 74,500,000 ounces produced here during that year approximately 60% appears to have come from the complex ores as a by-product in the operation of lead, zinc, and copper properties. A very few great ore-buying and smelting companies, together with a comparatively few great copper companies, therefore are the vendors of more than half the silver produced in the United States. How large a part of this silver from the complex ores is carried, irrespective of the silver price, by the profits on other metals is hard to say—I judge that perhaps as much as 30% of the silver produced by the country would be produced, even though the price fell far below its present level—the satisfactory prices prevailing on other associated metals justifying the considerable by-production of silver from the large copper mines, whatever the price of the white metal may be.

The situation in the United States, therefore, may be summed up with the statement that it rests with a very few individuals and corporations to determine the price at which the sales of silver to the mints of the United States, to the arts, and for export shall be made. Yet the price of silver has not been made in the United States, unless it were in the brief period last year when the market escaped from the control of its ancient manipulators. It is perhaps needless for me to tell you that this function of price-making has been discharged for a century or two by what is

known as the "London Fixing Board," a group comprising four brokers licensed under Crown grant in London as representatives of the silver-using nations and the great silver buyers and sellers over the world. The inordinate power of this group over the destiny of the metal is clearly pointed out in the first report of the Federal Trade Commission. Treasury officials with whom the matter was discussed were vehement in their denial that the American export order had affected silver prices, contending that no license to ship silver bullion to friendly nations had ever been refused. Likewise, it was pointed out, the reported Mexican silver purchase to which I have referred had never been consummated, though it was also indicated that the proposed transaction then involved and perhaps still involves questions of state policy affecting our immediate and future relations with Mexico.

While a few of the large nonproducing American metal vendors appear to oppose too high a price for silver upon the ground that it may tend to overstimulate the production of associated metals—in fact, contending that lead and zinc are today a drug upon the market as a result of overproduction partly due to prevailing silver prices—there is little to indicate, in any of the matter that has come to my attention, a disposition on the part of important American interests not associated with British houses to interfere seriously with the normal operation of economic laws in so far as these laws tend to affect the price of silver. But this cannot be said of the attitude of Great Britain, which government for very practical reasons—in her particular view of the matter—has consistently and most successfully clubbed the white metal into subjugation when the price rose above certain limits established by the arbitrary monetary systems existent in certain of her dependencies. This leads me to a short discussion of Oriental exchange matters pertinent to this matter.

The monetary unit of British India is the government rupee containing 165 grains of fine silver. An artificial gold redemption basis was established for the rupee in 1906, making 15 rupees of equal value to and redeemable by one pound sterling. The face value of the rupee at the legal ratio with gold equals \$0.3244 in American exchange. If 165 grains of silver are equal in coin value to 32.44 cents, the silver in the rupee will have a coining value of 94.37 cents. It is apparent, therefore, that when the price of silver in India goes above 94.37 cents per ounce, the silver in the rupee is worth more than the coin itself, and the native finds it profitable to melt it down and resell the silver. When silver delivered in India brings approximately 94 cents, the price of silver, with prevailing freight, insurance, and commission rates,

is approximately 86 cents in New York, the difference in the two quotations representing the cost of delivery.

Financial transactions in China, another great user of silver, are conducted in part with a great variety of unstandardized silver coins, which, like the Mexican dollar prior to the adoption of the gold standard in that country, pass in trade and barter on a basis which takes into account the values at current metal prices of their respective silver contents.

The larger transactions of China are conducted with bills of exchange issued by authorized sources and backed by the stamped silver bar, known as sycee. These bills of exchange or sterling are covered by silver which is often purchased abroad for future delivery. This method of finance calls for more or less regular purchases by Chinese merchants and brokers—heretofore largely through the London market—of silver in the United States. The system must utilize the credit of American, and particularly British, banking organizations, and brings about a situation in which silver speculation proceeds with all of the influences in full play which tend to raise or depress prices.

The large amount of silver used for coinage in China in 1915—a matter to which I referred some moments ago, probably in part at least—consumed sycee which had to be replaced, and in this way may we account for the successful conduct in that year of minting operation which utilized silver in excess of the world's production without materially affecting the price of the metal on the New York and London exchanges, or of calling in foreign stocks, if such existed, to make up the deficiency.

It is also true that some five years ago provision was made for the purchase of 150 million ounces of silver in China for the purpose of supplanting their numerous unstandardized coins while these coins were being retired and reminted on the standardized basis. The fall of the empire is alleged to have checked the operation of these plans. In any event, 1917 saw a greatly enhanced demand in China for the white metal.

The Orient has been well called a "sink-hole" for the precious metals. Silver and much of the gold consigned to the far East never come out, and may be said to have been lost to the balance of the world so far as possession or recovery, immediate or future, is concerned. If stocks of silver exist there, and they probably do, these stocks are not available for the uses of the western nations. One, and perhaps only one, great stock of available silver does, however, exist and that stock is to be found in the Treasury of the United States in the form of more than 490 million coined silver dollars accumulated under the Act of February 23, 1878,

authorizing the issuance of the silver certificates, and under the so-called Sherman Act of 1890, providing for the purchase and coinage of silver bullion. Against this very considerable silver reserve there was outstanding and in circulation on December 31, 1916, silver certificates of a face value in excess of 476 million dollars.

All of the matters which I have just recounted, dry as they may appear on their face, may prove of practical interest to you when considered in connection with certain historical facts relative to the break in the price of silver in September.

There was immediately placed an embargo on private importations of silver into India when the price of silver began to threaten the stability of the rupee as a coin. Silver can today be shipped into that British dependency only when it is directly consigned to the British Indian mint, or to its authorized agents. It goes without saying that the government and those agencies are taking no silver at a price which would put an effectual premium on the rupee.

As early as September evidence appeared in the market letters of British silver-brokers of a movement to liberate for immediate use a part or all of the silver now stored in the Treasury of the United States. A visit to this country by Lord Reading, acting as an emissary of Great Britain, is alleged to have had for its object certain negotiations looking to the continued utilization of silver wherever the same might be found in the settlement of trade balances and to satisfy other needs of the Allies, with the contemporaneous use of the devices at the command of America and the Entente to depress the price to a point where the rupee might still be profitably coined and maintained in circulation. One of these devices actually and most effectually employed by the English banks and their American exchanges was the withdrawal without warning of the credit of the Chinese silver-buyers in the United States necessary to the conduct of their operations, a maneuver which left the representatives of the Chinese firms with two or three million ounces of silver on their hands in this country and no money to pay for it. This silver went on the only market open for it after the practical fencing-off of the Orient—the United States market—and was as important as any single factor in affecting the sharp decline referred to in the earlier part of my remarks. The merciless manner in which natural commercial laws were set aside in these transactions naturally arouses resentment, but the operation of these financial submarine methods did not destroy the need for silver, even while it sank, “without leaving a trace,” the high hopes for a better price for the white

metal. The fact remained as theretofore that silver was still required in great quantities and in excess of an available current supply if the gold reserves of the United States and Great Britain were to be maintained intact.

I trust that the recitation of all of this matter may help in an understanding of the negotiations which took place in Washington, and to which I will now attempt to confine my remarks.

The Nevada Silver Committee which, as you perhaps know, acted as spokesmen for all the western representatives throughout the negotiations, was composed of Mr. Whitman Symmes, the direct emissary of the Nevada Mine Operators' Association, an eminent mining engineer and an equally eminent economist and practical student of Oriental exchange problems; Mr. Charles Butters, a mine operator and engineer with interests in many parts of the world; Mr. Howard Brady, an engineer connected for many years with some of Nevada's most important and successful mining developments and operations, and myself.

We found on our arrival in Washington that Secretary McAdoo had appointed an Advisory Commission to confer with us. This commission consisted of representatives of the three important subordinate branches of the Treasury having at this time to do with the money metals and foreign exchange. This Treasury Committee consisted of Hon. Raymond T. Baker, Director of the Mint, who, by the way, was born in the great silver camp of Eureka, Nevada, and whose sympathy with the problems of the silver miner could not be questioned; Mr. Albert Straus, a great international banker, one of the volunteer captains of industry and finance now assisting the Secretary of the Treasury in this crisis as chairman of the Export Board, and Mr. Harding, the governor of the Federal Reserve Board in Washington.

No effort was made by this committee to conceal the plans so vaguely indicated to the public in the press dispatch informing us of the intention of the Government to fix the price of silver. It was frankly stated that the United States was loath to part with any of its reserve of gold; that adverse balances with the Orient, aggregating each month many millions of dollars, had to be met; that the conservation of the gold reserve required the meeting of these balances with silver, and that the only available supply of silver adequate to satisfy immediate demands was the 490 million coined dollars of the United States standing back of the silver certificates.

It was further stated that the Government had in contemplation the introduction of a bill in Congress providing for the withdrawal of so much of this silver as might be needed; the simultaneous retirement of the silver certificates issued thereon as

rapidly as contracts for the future delivery of silver by responsible concerns could be entered into, and, finally, to prevent the contraction of the currency while this plan was in process of consummation, the issuance of Federal Reserve bank-notes in lieu of the silver certificates withdrawn in the manner just explained to you.

In short, the Government proposed borrowing, to satisfy its immediate needs, a considerable amount of silver from the Treasury silver reserve and the restoration of that silver by purchase made on the basis of a future delivery at a fixed price from those who might be in a position to enter into such future contracts with the Government.

The proposition on its face appeared to be fundamentally fair (granting that the price to be paid for the silver purchased forward be sufficient to take care of increased costs of production) and to call for the patriotic and whole-hearted cooperation of the silver miner.

The burden was thus imposed upon our silver committee to present facts and figures to the Treasury Department in justification of our contention that \$1 at this time was a fair price for the white metal. While data in support of this contention were in process of preparation, we became aware of an undercurrent of opposition to the whole plan coming from important silver vendors, the motives for which had to be ascertained.

At a conference in New York City, at which were represented many large producers—The American Smelting and Refining Company, The United States Mining and Smelting Company, and some of the bankers and brokers interested in silver transactions—the practical objection of the commercial ore-buying and smelting organizations was divulged.

This objection was based on the obviously sound proposition that the proposed scheme would in no wise control the New York quotations, upon which, in accordance with their contracts with many thousands of individual producers, the ore-buying and smelting interests would have to settle for the metal; in short, that a condition might be set up under which these people would be required, should they enter into contracts with the Secretary of the Treasury, to supply the Government with silver at a fixed price, while perhaps paying a much higher price for the same metal to the direct producers, whose agents, in effect, they were.

It was pointed out that contracts with the Government on this basis could not, as a business proposition, be considered, and, as I have stated, this group disposes of sufficient of the American production to make the plan almost impracticable without their cooperation. Likewise came objection from the small producer

who contended that, because of the irregularity of his deposit, he could not undertake to contract for the delivery of something which he might or might not be able to produce, and that, because of the inadequacy of his organization, he could not, should he feel confident of his ability to meet the terms of his contract, in so far as production was concerned, compete with the larger intrenched interests who handle so large a part of the country's production.

It seemed to be the unanimous desire of all of the interests concerned that an effort be made to have the Government purchase all of the silver tendered to it for immediate or future delivery at a fixed price. The Treasury Department did not look with favor on this proposition and made it very plain that its operations were not to be likened to those operations of the War Emergency Boards which had established prices on the commodities required to satisfy the Nation's industrial needs.

Our committee was finally successful in bringing together in a notable conference at Washington a considerable number of the western Senators, representatives of the Treasury Department, and the representatives of all the domestic interests the cooperation of which appeared essential in carrying the proposed plan to a successful consummation. In the meantime facts relative to the costs of production had been compiled and prepared for submission to the Treasury Committee.

From the great number of silicious mines producing silver exclusively, and gold and silver, in the State of Nevada, in Utah, and in Colorado, it was possible to show that while silver had advanced in price only 44% over the price prevailing in the pre-war period, the average cost of mining supplies had increased 80%; the average cost of mining labor 29%, and the average cost of production, in typical mines which continued to maintain their normal advance development, between 50% and 60%.

As mining men you will appreciate the impossibility of presenting figures showing the cost of the production of an ounce of silver in the United States. It is probable that in no two mines, even in the same district, are their costs identical. It was possible to show, however, that, without taking into account proper charges for the extinguishment of capital, the costs and losses in mining and treating a ton of silicious ore in the silver mines of Tonopah and Rochester had risen to a trifle under \$10 per ton, making it obvious that, as far as the western exclusive silver mine was concerned, a price of \$1 per ounce was necessary to make commercial the reserves of ores in place of as low a grade as those carrying a metal content of ten ounces of silver per ton.

It was contended obviously that to materially increase silver

production at this time would require that the ten-ounce ores be made workable.

Statistics relative to the market price of silver stocks in the pre-war period and during 1917 were presented, indicating an appraisalment by the public at a reduced value of these securities, even in the face of improving silver prices.

Perhaps most effective of all the data submitted was that showing the great differential existing in prices of the products of eastern and western industries. Silver, as I have just stated, showed on December 1 an increase in price of 44% above the pre-war price; copper an increase of 65%; lead an increase of 58%, and zinc an increase of 50%, while steel, wheat, and cotton were commanding prices 137%, 124%, and 122%, respectively, higher than the prices at which these commodities might have been purchased in 1913.

It was pointed out that mining wages in the West, already adjusted in many instances on higher prices for silver than the prices now prevailing, might, in accordance with well-established experience, be expected to rise more or less continuously while the price of the staple commodities remained at their present high levels. It was shown that the plan of the Government provided for the surrender of silver to it at a fixed price to continue over a period in the future in which the cost of production may reasonably be expected to increase rather than decrease.

We were gratified after the submission of this data to note in the first draft of the proposed legislation prepared for discussion by Mr. Straus, that he had conceded the reasonableness of our contentions and had provided for the purchase of such silver as the Government might contract for at the price of \$1 per ounce. This draft was modified by us in such a manner as to care for the various practical objections which had been urged against the plan of future buying, but we discovered that we had by this procedure opened the door to a new set of practical objections, a detailed explanation of which I will omit at this time.

In passing, however, I will say that among the protestants of all of the plans proposed was a considerable group which felt that the entire scheme, however modified or altered, carried with it possibilities of injury to the general principle of bimetallism, and that the entire project constituted an ill-timed obstruction in the road to that objective.

Finally, a counter-proposal was made to the Government which entirely eliminated the proposition of future contracts. This plan provided simply for the withdrawal by the Government of such silver as it might require to satisfy its immediate needs, and the

purchase in the open market of all of the silver which might be offered at the fixed price of \$1 per ounce, such purchase to be employed for resale to the arts under proper regulations; for resale to the Allies; for the coinage requirements of the Government, and for the restoration of the silver borrowed in conformity with the terms of this proposed Act, which carried as one of its provisions the proposition that it should remain in force until all of the borrowed silver should have been returned.

All of the drafts to which I have referred contained more or less identical provisions relative to the temporary retirement of the silver certificates and the temporary substitution therefor of an equal issue of Federal Reserve bank-notes.

Just prior to my departure from Carson City to attend this conference I received a still further modified draft of a proposed bill, the terms of which I considered satisfactory, providing as it does for practically all that we asked, for a price of \$1 for such silver as the Government may buy and for the entire restitution of the silver borrowed from the reserve with metal purchased at this price. The hope was expressed in the letter transmitting the draft that a general concurrence in its terms by all interested elements might soon be had and that the bill would be thereafter promptly introduced in Congress. Later advices, received since my arrival here, indicate further objections, said to have originated with the British Government and with the Federal Reserve Board. I therefore feel less optimistic regarding the matter than I did a few days ago, although I am confident that the bill will be introduced by Senator Pittman in the near future, and that, with the aid of the western representatives, he will secure its passage by the same masterful presentation of its merits to Congress as was made by him in our presentation of the case to the Treasury Committee.

Just what the enactment of this bill will mean to the industry I leave to your decision, with the single suggestion that nothing taking account of your interests will be likely of passage in Congress unless you yourselves stand solidly and unitedly behind it.

You will recall the statements and advice given you last night in the matter of united action by Senators Kendrick and Pittman in their discussions of the Leasing Bill, and you must have been impressed with the soundness of Senator Pittman's statement that more legislation is killed in Washington by its friends than by its enemies.

We are confronted at this time with a proposition which requires concerted action on the part of the mining industry if

our Government is to take the first step, as I believe this to be, in securing for the United States some voice in those transactions involving sales of silver which we produce, to the other nations of the world. The negotiations under way do not contemplate bimetallism. It cannot be gainsaid, however, that the advocates of that cause must recognize in the proposed plan at least an initial step toward the restoration of some of the dignity which for centuries attached to the white metal and of which it has been deprived by agencies which we have allowed to pass beyond our control.

American capital invested in the United States, in Canada and Mexico, has created a North American industry which produces far and away the greater part of the world's supply of silver. American capital and American labor, guided by American engineering genius, are responsible directly for this production; but American business genius has not thus far been equal to the task of establishing a dictatorship in the silver market. Many things underlie this situation. The Federal Trade Commission points out cogently the reasons why we have been outdistanced in the world market by our competitors. We have, obviously, in our efforts to prevent domestic abuses, carried our laws and regulations preventing combinations to a point where we have injured our own interests abroad. We have been derelict in providing a merchant marine. We have been behind the other nations of the world in the establishment of American credit agencies in those countries to which our exports must go.

The silver miner does not view these larger national problems as matters affecting his industry, but he must come to this, and he must, in short, present a united front if the Government is to be guided on a predetermined course affecting the fate of his product, for we sell to the balance of the world strictly on such terms as may be laid down to us by others, and with no voice in the determination of those terms, even while the North American silver production has a commercial value little short of one hundred million dollars every year even at pre-war prices.

Nor is this matter vital to the interests of the silver miner alone. It is surely a matter of some concern to the Nation whether its natural resources are to be exploited to care for the world's needs and sold to the balance of the world under conditions imposed upon us by our keenest competitors for world trade. It is a matter of concern to the Nation whether a metal which transacts in barter and trade a great part of the world's business, and a metal which we produce, is to be bludgeoned about by our business competitors, while we stand idly by, blind to the potential

advantage in world-business affairs conferred by a monopolistic control of silver exchange exerted by those to whom we must sell.

Great Britain has not been blind to this power, nor has she failed to harness it and bend it to her will in the securing of a mastery of Oriental trade. We produce silver; she secures it on her own terms, makes a profit on the transaction directly, and places us at a distinct disadvantage as a competitor for our fair share of the stupendous business of the Eastern Hemisphere with its 800,000,000 inhabitants.

Lloyd George has said, in a recent speech, that the world war would "be won with silver bullets." The utility of the white metal is, and must be, recognized by our own Government. It may be idle to speculate on future demands. We do know, however, that immediate demands exist for more silver than can be produced; that we have seen our extraordinary impotence in a situation in which common sense dictates that our own products should in international exchange go off at the best prices we can secure for them, and that we have seen these products bartered, on a basis not of our own making, for the products of another nation which skilfully secures for her products the best prices obtainable under the well-established laws upon which staple prices are predicated everywhere.

It is impossible to repress a certain feeling of resentment that we should find ourselves at such a disadvantage, and there should be in the mind of every silver producer, and in the mind of every American economist who has at heart the best interests of his country, a determination to see that there shall be a more equitable distribution of control in this matter, if not now, just as soon as our present all-important international difficulty, the war, has been disposed of. Today we are at war, and war constitutes the one business of the Nation. The Government must secure material abroad and it must settle its adverse balance in gold or silver. If artificial standards in the monetary system of the dependencies of Great Britain require adjustment, this is not, perhaps, the time to force that adjustment. I am free to say that I would, personally, see every silver mine in the United States close for the period of the war, rather than embarrass our own Government or that of any of the Allies to the point where one British battery would go out of action because of ill-timed complications set up by our contentions, and all silver miners, like the good Americans they are, will, I am sure, join me in this sentiment.

But there is an obviously fair compromise contained in the provisions of the measure which proposes the fixing of a temporary

price of \$1 on the white metal. To demand more than \$1 at this time might readily enough bring about complications inimical to the best interests of the Allied arms, and to demand more than this would, as a practical proposition, undoubtedly bring about a determined opposition, not only by those to whom American silver must be sold, but from no inconsiderable part of our own people who would inevitably view the demand as one actuated by sordidly selfish and unpatriotic motives. The silver miner cannot rest under this suspicion in these times. It will be well to bear in mind that nothing can now be forced upon or through Congress which does not bear upon its face the stamp of fairness. It is likewise true that the financial ingenuity of Great Britain has been by no means exhausted and that the pooling of the trade balances of the Empire and her dependencies might, in fact, entirely suspend for an unlimited period the market for American silver in the Orient.

You can, however, in my judgment, stand in good conscience squarely behind the proposition now pending. If that proposition be enacted into law, I believe that it will tend to greatly stimulate production and that it will give a needed impetus to prospecting and development.

As mining men, you know better than I can tell you just how essential to the future of your industry are fair and stabilized prices for the metals which you produce. The Nation is no less vitally concerned than are you in this proposition.

It is hope of fair ultimate reward that sustains the prospector and urges him onward in his hard and rarely fortunate vocation. It is a heaven-sent optimism which sends him cheerfully into the lonely and often terrible country where Nature hides her mineral treasure-trove. Verily, "The work of the world waits on him; if he slacks or fails armies and statesmen are helpless." This was said of the miner, but without the prospector there would be no miner.

A vision has been given to him of a pot of gold at the foot of the rainbow, and it is the function of the statesman to see to it, in so far as he legitimately may, that his quest, when it is rewarded at all, be rewarded with something more than a pot of dross if the industrial supremacy which our mines have made possible is to be maintained and that financial supremacy which our gold and silver mines should long ago have made possible is to be at last established.

I thank you for your attention.



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Dr. JOHN J. SULLIVAN (1915-1919)	Reno
Dr. B. F. CURLER (1917-1921)	Elko
Mrs. EDNA C. BAKER (1917-1919)	Sparks

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THEODORE B. MACK, D.V.M.	Bacteriologist and Veterinarian
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CHARLES S. KNIGHT, B.S.	Agronomist
CHARLES E. FLEMING, B.S.A.	Range Management
EDWARD RECORDS, V.M.D.	Assistant Bacteriologist
STEPHEN LOCKETT, V.M.D.	Assistant Veterinarian
HARRY W. JAKEMAN, V.M.D.	Assistant Bacteriologist
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STEWART PRICE FERGUSON*	Associate Meteorologist
FREDERICK W. WILSON, M.S.	Consulting Animal Husbandman
VENNER E. SCOTT, B.S.	Consulting Dairy Husbandman
JOHN BLAIR MENARDI, B.S.	Assistant in Agronomy
Wm. T.W. COWGILL, M.A.	Librarian
LETHA A. PYLE, B.A.	Secretary

*Resigned September 1, 1916.

REPORT OF THE DIRECTOR

THE FUNDS AND THE FIELD OF WORK OF THE NEVADA AGRICULTURAL EXPERIMENT STATION

The Nevada Agricultural Experiment Station is supported almost entirely by two federal funds, the Hatch Fund (\$15,000 per annum) and the Adams Fund (\$15,000 per annum). These two funds are sent quarterly from Washington, D. C.; and a report showing how they have been expended is issued annually from the State Printing Office. No assistance has been asked for from the State of Nevada. For several years past, however, the Station has received a fund amounting approximately \$1,000 per annum from the State Public Service Commission of the University. This small state fund is applied in part to the preliminary study of problems before they have been accepted as projects by the Federal Government.

There are, of course, a great many problems in the agriculture of the State, problems which can be solved by scientific study. With the limited resources of the Station it is almost out of the question to undertake any very large number of projects at one time. More could be done, of course, if state funds were drawn upon more heavily; and there is good reason to believe that the State would willingly support Experiment Station work in Nevada; but for the past four years it has seemed more desirable that all available state funds should be applied to the development of the Division of Agricultural Extension, and that it promises to be of great assistance to farming in this State. That is, since the funds available in the State of Nevada are limited, it has seemed more desirable in recent years to develop a new organization for spreading information and stimulating agricultural progress in the State than to assist an established organization for the scientific study of agricultural problems.

The Relation of Experimental to Extension Work

The foundation upon which class-room teaching in agriculture and extension teaching by specialists in the field alike must rest, is the relation of accurate and painstaking experimental tests. Unless a man knows something of the evidence upon which his assertion rests, he is not in a position to be certain that he is telling the entire truth. Any doctrine concerning the fertilization and preparation of the soil, the care and housing of animals, everything that is taught concerning the treatment of insect pests and plant diseases, or concerning the prevention and cure of animal diseases, alike must be founded on carefully conducted series of experiments in order to rest upon a safe basis of evidence. Therefore, it was necessary that the experiment stations of all States should be at work for years before they could supply to farmers or to extension workers living in farming communities a series of statements of fact which it would be safe to teach.

In the earlier years of experiment station work it was found necessary at times to take the station men away from their experiments and to place them in the field as farmers' institute lecturers or in other capacities as extension workers. At the present time, however, when the extension work is adequately financed and is making rapid and substantial progress in Nevada as in other States, it is both desirable

and necessary that the experiment station men shall work vigorously within their own limited field of effort, which is the conduct of experiments to discover unknown things.

It is essential, however, that the experiment station men shall place their work on such a basis that much of it, perhaps the greater part of it, shall be done outside the University. Thus, in the Department of Range Management it is necessary that the greater part of the work shall be done upon the range. In entomology, likewise, the insect problems of the State cannot be studied entirely at the University, and for this reason a field station for the study of one problem has been established in Antelope Valley. Field tests in the use of water, and field trials of varieties of crops made upon the experimental plots at Reno, must be tested later throughout the principal farming sections of the State in order to be of the utmost value. In bacteriology and veterinary science, likewise, it has been found necessary to establish from time to time field stations for the study of special problems. Thus between the years 1908 and 1916 a field station for the study of swamp fever (equine anemia) was maintained near Lee, Elko County, Nevada. The Veterinary Department is now maintaining a field station in Antelope Valley for the study of hemorrhagic septicemia. On the other hand, most of the chemical work of the Nevada Station must be done upon the University campus and material must be brought in from the outside to the local laboratory, since a chemical laboratory requires highly specialized equipment and appliances which cannot be readily set up for work in a field station.

Because of the rapid growth of agricultural extension under Director C. A. Norcross, the Experiment Station is now able to devote its entire energies to experimental studies which constitute its own proper field of work. It is the duty of the Experiment Station to discover facts. It is the function of the extension service to teach these and other facts. In each state the extension service is a clearing house for information discovered in all the States. No one experiment station can make in any one year any very large contribution to human knowledge. The contribution made by the whole group of experiment stations is large and increasingly important. Thus, it is essential that extension workers everywhere shall keep in close touch with the work done in the experiment stations of all the States, in order that they may know what new things have been discovered which may apply toward agricultural progress in each of the States.

On the other hand, since the extension workers cover intimately every nook and corner of every State—meeting all classes of people in the farming industry and coming into direct contact with their problems—it is evident that the extension workers are in a position to obtain valuable information concerning the extent and gravity of agricultural problems. Thus, while the work of the experiment stations contributes largely to the success of extension work, it is equally clear that the extension workers are in a position to repay their debt by discovering problems which demand solution and by forming accurate estimates of the extent and importance of such problems. The closest reciprocal relation between the two divisions thus becomes exceedingly necessary.

Some time in the future it may be possible so to arrange the organizations that temporary exchanges of workers between the two divisions may be brought about. Thus, occasionally a man or woman of ade-

quate special training for experimental work may be found in extension service, or an experimenter who has ability as a field teacher may be found in an experiment station laboratory.

It is of great value to an extension worker to understand the experimental method and to realize how much patient, exact, and prolonged work is required to establish a very simple set of facts. It is of value also to an experiment station man to come into close contact with farming people and also to see their needs and problems as the needs and problems of an industry—practical, concrete problems for which a definite, practical, and concrete solution is demanded. However, it is not unlikely that it may prove better for the personnel of the two organizations to remain for the most part distinct; since only rarely can an experimenter, working ardently upon his special problem, leave before a solution has been reached and turn his energies even temporarily into another field of work. For instance, a man working upon a chemical problem or a problem in bacteriology or some problem of plant or animal disease must in general see his problem through before he will be in a position to leave it without great loss or injury.

POLICY OF THE NEVADA STATION

Since the year 1913-1914 an active effort has been in progress so to rearrange the program of the Nevada Experiment Station as to adapt it more definitely to the needs of the State. This has been largely the result of an awakening interest in the work of the Station on the part of livestock men. The steady increase in the value of cattle and sheep and the slow but inevitable decrease in range pasturage have led livestock owners to introduce modern business methods and to watch every source of loss.

The land hunger that is being felt all over the United States has caused owners of unproductive tracts of sagebrush to seek water for irrigation. The leading problems of agriculture in Nevada are those connected with the use of water in crop production and with losses due to animal diseases and poisonous plants. Any large increase in the range of farm crops in the State can be brought about only by a wiser use of water in irrigation. Such an increased acreage probably means larger expense in the handling of the water, and this is apt to mean that more valuable crops must be grown. This in turn will bring about an increase in population and a decrease in the size of the farms.

Thus the Station must inevitably engage in two distinct lines of effort. We must study the problems of the livestock industry less with a view to the extension of that industry than with a view to rendering it more profitable by preventing unnecessary waste and loss. We must study the use of water in irrigation with a view to the utmost extension of the irrigated area.

There is every prospect that for a great many years to come sheep and cattle will be the most valuable agricultural products of the State of Nevada, and that they will lead all other products by an immense margin. This is because the State is dry and mountainous. It is ribbed with mountain chains running north and south over the entire area of the State with desert valleys lying between the mountains.

A few streams, the Truckee River, the Humboldt, the Carson, and the Walker, furnish a very considerable amount of water for irrigation. It has been used wastefully in almost every valley—often to

the injury of the irrigated lands and almost always to the distinct injury or ruin of the other lands lower down in the same valley. Early in the history of the State all the water in the streams was appropriated, often many times over. These filings led to the belief that all available water was being used in irrigation. Still, every year new lands tributary to these streams have been broken up and put into cultivation. That is, the irrigated area has steadily increased, with no increase in the available water. The results of experiments conducted for the last four years by Dean C. S. Knight of the Nevada Station, taken in connection with excellent experimental work done by the Utah Station and stations in other Western States, all indicate that even now our present Nevada acreage under irrigation can be at least doubled, with nothing but benefit to the entire irrigated area.

There is need, therefore, of a long series of careful experiments showing the actual water requirements of the principal crops grown in Nevada. This work, of course, must be done first on the trial plots at Reno. Certain conclusions can be reached here which are of the utmost importance because all of the conditions of the experiments are under complete control. Soils and climatic conditions differ, however, in every valley of the State; and any conclusions based on the experiments at Reno must be widely tested in other valleys before recommendations can safely be made. It will be necessary to study soils and their chemical and physical conditions and to study local methods of applying water and the chemical make-up of local water supplies. If, however, this line of work in the Nevada Station leads to any considerable increase in the irrigated area, or to a wiser and more conservative use of our limited water supply, it will be of wide benefit and will repay its cost many times over.

The Station is studying losses of live stock due to diseases, in preference to studying the usual feeding, breeding, and marketing problems of the animal industry, because the livestock owners of Nevada regard the problems connected with feeding, breeding, and marketing as business matters which they can handle themselves. Disease, however, presents problems which require the most refined laboratory methods for their solutions. The rapid growth of the Department of Veterinary Science has been made in direct response to an earnest demand from owners of cattle and sheep who have heartily endorsed the policy of the Station in this regard.

The problems of the range have been approached in the Nevada Station in past years from the standpoint of botany. Thus we have studied in earlier years the relative importance of the native range forage plants, have classified these plants, and have obtained through the work of Messrs. Hillman, Kennedy, and Dinsmore a large amount of valuable information concerning their feeding value. This work laid a foundation of the utmost importance for work of another type.

It became evident that the problems of the range must be approached from the standpoint of the handling of live stock on the range in such a way that the native pasturage can be used without injury to its continuous carrying capacity. A man fitted to undertake range studies of this type is a very hard man to find. He must know the range as the sheepherder and cowboy alone know it. He must have ridden after cattle and tramped after sheep for months and years and must have

seen the effects of overgrazing and of bad methods of handling stock as business problems. He must also be a trained botanist, able readily to distinguish the various forms of plant-life from one another, to recognize the poisonous forms at a glance, and to appreciate equally the conditions under which the nutritious and valuable kinds will be reproduced and spread.

Very admirable work has been done in this field by the United States Forest Service under Mr. J. T. Jardine in charge of grazing studies in that service. A group of men working under Mr. Jardine have shown that it is not only possible to use range continuously without injury, but that in many instances range that is used for sheep and cattle pasturage will produce a steadily increasing amount of forage year by year if the methods of handling live stock are of the right type. In 1916 the University of Nevada secured Mr. Jardine's first assistant, Mr. C. E. Fleming, who was then in charge of the Jornada Grazing Reserve in New Mexico.

Since coming to the Nevada Experiment Station, Mr. Fleming has traveled many hundreds of miles in the saddle and on foot over Nevada ranges in order to gain a first-hand knowledge of conditions. He is already in a position to make recommendations of great value. First of all, he now urges the stockmen of the State to drop at once the idea that there is somewhere in the world a plant or a group of plants that can be sown broadcast over the Nevada ranges to grow luxuriantly and restore the ranges to their former carrying capacity. There is no probability that such a plant will ever be discovered. There is no source of supply from which seeds of any value for this purpose can now be purchased. Everything points to the conclusion that the best forage plants for Nevada ranges are the original bunch-grass, sages, weeds, grass, and browse which are native to this State.

The Nevada ranges must simply be better cared for than they are now cared for outside of forest reserves, or else the State's output of cattle and sheep will decrease steadily instead of increasing as it should. Many livestock owners now advocate the creation of grazing reserves including all the public lands of the State suitable for grazing and not now included in forest reserves. Such federal grazing reserves under complete and intelligent control could readily be so administered as to put the livestock industry of Nevada upon a safe and profitable basis. On the whole, Mr. Fleming's observations have led him to feel that little or nothing can be done by any human agency toward the improvement of the public range lands so long as they lie open to competitive grazing by cattle and sheep. Much can be done, however, on the open range toward the introduction of methods of handling sheep and cattle which will diminish the present degree of injury and largely reduce losses due to poisonous plants.

The principal problems, therefore, at the present time in the agricultural industry of the State of Nevada which may be solved by experimental methods are the problems connected with the wise use of water in irrigation and those connected with animal diseases and plant-poisoning, and finally the important problems connected with the range forage throughout the State. These three groups of problems have been analyzed into a set of projects which are given in brief further on.

A later section of this annual report presents the work of the various

scientific departments in which these station projects are under study. The policy of the Nevada Agricultural Experiment Station may be stated very briefly as follows:

First—To choose a few vitally important problems in the agriculture of the State; to finance the study of these problems adequately; and, having secured the best men and the best facilities available, to study these problems year by year, working always toward a solution.

Second—To maintain consistently a high standard of scientific investigation in all the project work of the Station in order that conclusions reached may be based upon valid evidence.

PROJECTS OF THE NEVADA STATION

Project 1—Irrigation Experiments. Hatch Fund. Project Leader, Dean C. S. Knight, assisted by J. B. Menardi. Begun in 1914; to terminate in 1919.

The condition which sets a limit to farming in Nevada is the lack of water. Throughout the State there are large areas, whole valleys oftentimes of very considerable extent, where the absence of water makes agriculture impossible. Dry farming is still in the experimental stage. There are undoubtedly parts of the State where dry farming will be successful. In other regions in Nevada the rainfall occurs at the wrong time of the year, or is so deficient in quantity as to make the success of any form of dry farming problematical. The adaptation of crops to arid conditions and the steady improvement in methods of conserving water in the soil should lead to a considerable extension of the region dry-farmed in Nevada. Even then, however, the problem of how to make the available water go just as far as possible in crop production will still be the leading problem of Nevada agriculture.

The irrigation experiments undertaken by Dean C. S. Knight on the farm of the University of Nevada are intended to discover the stages of growth of alfalfa, wheat, and potatoes in which irrigation is most essential and most beneficial and to find out likewise the number of irrigations and the quantity of water applied in each irrigation which will yield the most profitable crop. These experiments will be completed in the fiscal year 1918-1919. Similar work will then be undertaken on a cooperative basis in the principal farming regions of Nevada. Dean Knight plans to test and to extend the information obtained from his experimental plots by similar experiments upon a much larger scale under actual farming conditions in other valleys of the State. This project is planned to give answers to questions continually asked of the Experiment Station: How much water should be applied to wheat? How many irrigations? How many inches of water at one time? At what stages of growth is water most needed? Then again, where water is very limited, we get the question: "With a given, limited quantity of water available, how can I get the greatest yield of wheat or of potatoes?"

The experiments listed as Project 1 have already yielded important information because they have been largely free from errors caused by summer rains; for it is difficult, when rain occurs, to separate the effect of rain from that of irrigation. Soil moisture studies have been made in order to determine the condition of the soil when water was applied. Samples of wheat raised under various conditions have been preserved and the gluten content will be determined. This will show

the effect of variations in irrigation upon the milling quality of the wheat.

Project 2—Variety Testing and Crop Improvement. Hatch Fund. Project Leader, Dean C. S. Knight, assisted by J. B. Menardi. Begun in 1914; continuous.

New varieties of the leading farm crops grown in Nevada are constantly being brought out; and new crops are being introduced in other States and other countries. Part of the work of the Experiment Station, therefore, is to test varieties and to try new crops to determine which are best suited to Nevada conditions. On the experimental plots at Reno, Dean Knight is showing that there are strains of alfalfa which are better adapted to Nevada than those ordinarily grown. His tests indicate likewise that there are a number of other sorts which are decidedly inferior to the ordinary Nevada alfalfa. This is true likewise with wheat, potatoes, barley, oats, and other important crops.

Ensilage Tests—The shortness of the growing season in valleys such as the leading agricultural valleys in Nevada, coupled with the dry nights due to the clearness of the air, give conditions which limit the use of corn for ensilage. The Experiment Station is therefore planning to test a number of other crops which promise to produce good ensilage. Small tracts have been planted with the Russian sunflower, Sudan grass, and other promising crops, and in the course of the coming winter feeding tests on a small scale will be made to show the quality of ensilage prepared from these crops.

Project 3—Anthrax Serum. Hatch Fund. Project Leader, Dr. W. B. Mack, assisted by Dr. Edward Records. Begun in 1916; terminated in 1916.

Anthrax has been a source of loss in the Nevada livestock industry for a great many years. Owing to the low price of range cattle, compounded with the infection and reinfection of grazing lands, the anthrax problem in Nevada has become a matter of great importance. The bacteria which cause anthrax live in the soil. Once the soil of a pasture becomes infected, the disease will appear year after year in animals placed upon this pasture. The purpose of this project was to determine whether the double-inoculation method of Pasteur could be replaced under range conditions by the single-treatment method worked out by Sobernheim.

In Pasteur's method the animals are inoculated with a small quantity of a culture of bacteria grown at an abnormally high temperature, thus depriving the bacteria of their usual virulence. Twelve days later they are again inoculated with a stronger virus. They are thus protected against infection. Under range conditions the difficulty with this method is that the animals have to be handled twice. This is naturally a difficult matter. The expense of handling is considerable, and the effect of driving the animals unnecessarily is decidedly bad. The method of Sobernheim consists of an injection of a serum prepared from the blood of horses which have been made immune to anthrax. At the same time a vaccine consisting of a small quantity of moderately virulent anthrax bacteria is injected. The advantage of this method is that only a single treatment is required and the animals are immediately made immune, while, in the method of Pasteur, after the first inoculation and before the second the cattle are more susceptible to

anthrax than before. Plainly, the advantages of the second method are of considerable importance; since it is inadvisable to drive range cattle to the vaccinating station twice, and since on infected pastures there is a probability of increased loss from anthrax after the first vaccination.

Work was begun on this project in 1916 in quarters especially provided for these studies. The project terminated successfully in the first quarter of the fiscal year 1917. The horses and burros which were used for the production of the serum yielded a very considerable quantity of unusually potent serum. This was demonstrated by standard tests upon small experimental animals.

It is probable that this method of preventing anthrax will be used more widely than any other in the future in Nevada.

Project 1—Chicken Cholera. Hatch Fund. Project Leader, Dr. W. B. Mack, assisted by Dr. Edward Records. Begun in 1914; terminated in December, 1916.

Since March, 1904, chicken cholera has been a subject of study in the Nevada Experiment Station. This project was outlined in the beginning because it was considered very desirable to develop the chicken industry in Nevada. There has been a strong tendency in past years to raise little else than sheep and cattle on the ranges, and hay with which to feed them in the valleys. With the growth of towns and cities of considerable size there has come to be a good local market for eggs and poultry in Nevada. This is supplied in part by eggs and dressed poultry shipped in from California; but the local supply of fowls and strictly fresh eggs has never been equal to the demand. It is therefore within the province of the Experiment Station to study the problems of the poultry industry, and thus to aid in its further development.

Chicken cholera has been found in five widely separated districts in western Nevada. The standard advice generally given to poultry owners in whose flocks the disease has appeared is to separate the sick from the well, isolate the sick birds, disinfect pens and yards, and keep everything scrupulously clean. These excellent measures of general hygiene have proven to be not practical in epidemics of chicken cholera. The disease is not checked by such measures, which are laborious and expensive and which under actual conditions are often out of the question. Dr. Mack, therefore, undertook a study of methods of putting a stop to chicken cholera by making the birds immune to the disease. Bacterins were prepared consisting of suspensions of dead-fowl cholera bacteria. Actual tests with thousands of birds showed that these bacterins put a prompt stop to outbreaks of fowl cholera.

Where the fowls are artificially inoculated in the laboratory, the bacterins do not protect; but field experiments have made it clear that under normal conditions the resistance of chickens can be raised by inoculation up to a point where they are immune to natural exposure.

The field test, of course, is a practical test; since it represents the condition under which infection normally occurs. For this reason this project has given ample grounds for the conclusion that, if bacterins prepared from fowls in a flock dying from fowl cholera are administered promptly, an outbreak of the disease may be ended promptly and with relatively small expense.

Project 5—Insect Injuries to Alfalfa. Hatch Fund. Project Leader, S. B. Doten. Begun in 1916; continuous.

From time to time in past years alfalfa in Nevada has been seriously injured by grasshoppers, cutworms, and other insects. As far as is now known the alfalfa weevil has not yet appeared in the State, although there has been every opportunity for its introduction from Utah.

In the fiscal year 1916–1917 very few reports were received of any form of insect injury to alfalfa. This was particularly fortunate because of the fact that the supply of hay held in reserve was almost exhausted during the unusually severe winter. From time to time as insect problems present themselves this project will be active, and the Experiment Station is particularly anxious to receive reports upon insect injuries to alfalfa at the earliest possible moment.



Figure 1—A typical summer sheep camp on the range.

Project 6—Poisonous Range Plants. Hatch Fund. Project Leader, C. E. Fleming. Begun in 1916; continuous.

From the beginning of the work of the Nevada Experiment Station attention has been called to this problem by stockmen. An attempt has been made to solve the problem by studying the poisonous plants of the range from a chemical and botanical standpoint. The chemist can often determine definitely what chemical compounds are found in the plant at various stages of growth. The botanist can classify and describe the poisonous plants and study their structure and habits. All this information, although useful, is incomplete; for the primary question is really the question of methods of preventing livestock poisoning.

There is little probability of finding an antidote which can be administered to a herd of sheep in which several hundred head may be poisoned at one time; but it is extremely important to find out how to keep the sheep from being poisoned. The United States Forest Service has already shown that certain poisonous plants grow in such local

clumps that they can readily and very profitably be uprooted and destroyed. A careful study of the conditions under which poisoning actually occurs indicates that there are methods of handling sheep and cattle on the range which will reduce losses very greatly. For instance, if a drive must be made across a notoriously poisonous plant area it is a good plan to feed sheep heavily on alfalfa hay before driving them across. Under these conditions they will not eat enough of the poisonous plants to be injured.

Again, if sheep are bunched and driven hard through country where poisonous plants are abundant, they will eat every plant they can reach as they are hurried along and many of them will be poisoned. The same sheep, grazing slowly and at their ease, can be herded through the same area without loss.

It is Mr. Fleming's purpose in this project to study practical, common-sense methods of handling live stock under actual range conditions which will greatly reduce losses due to poisonous plants. A good deal of progress has already been made; and in the near future the Station plans to publish for the use of stockmen all information now available.

Project 7—Reestablishment of Native Range Forage Plants. Hatch Fund.

Project 8—Relative Importance of Native Range Forage Plants. Hatch Fund.

Project 9—Introduction of Foreign Range Forage Plants. Hatch Fund.

Project 10—Carrying Capacity of the Range. Hatch Fund. Project Leader, C. E. Fleming. Begun in 1916; continuous.

In the early years of the Nevada Station, Professor Fred H. Hillman, Head of the Department of Botany in the University of Nevada, collected and studied a number of the most important Nevada range grasses and had begun to study their relation to the livestock industry of the State when, in the year 1899, he resigned to take up important work in the Department of Agriculture. Later, between the years 1904 and 1914, Dr. P. B. Kennedy, his successor, made admirable studies of the leading range forest plants of Nevada and eastern California. The work of Messrs. Hillman and Kennedy thus laid an excellent foundation for future work upon these projects.

Mr. Fleming plans to study range plants not individually but as groups of plants which make up the forage of the range. It is not enough to point out to stockmen which plants are most important. It is of greater significance to study the conditions under which these plants grow, thrive, and reproduce themselves while in use as food for sheep and cattle.

The economic conditions governing the sheep and cattle industries in Nevada are leading steadily toward the destruction of vast areas of range and toward a lasting injury to Nevada's leading agricultural industries. Mr. Fleming has already covered on horseback hundreds of miles of Nevada range, finding regions where the native forage plants have so far disappeared that only here and there in clumps of sagebrush can remnants of the original vegetation be found.

Every year the Nevada Experiment Station is called upon for infor-

mation concerning grasses and plants which can be sown profitably upon denuded ranges. We have no such information. There is no source of supply from which seeds of this kind may be purchased. If the overgrazed ranges of Nevada are ever to be restored to their original productiveness, it must be done by methods of range management

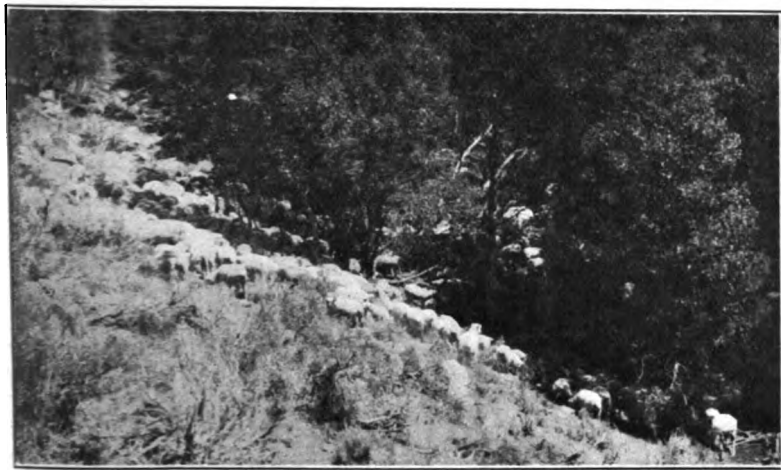


Figure 2—A typical summer grazing range. The sheep are bedded down in an aspen area during the heat of the day.



Figure 3—A badly depleted piece of sheep range due to excessive use of the same area as a bed ground

which will permit the native forage to reproduce itself and again to occupy the land. There is no other course which gives any promise of success; and it appears quite unlikely that ranges which have been almost ruined will ever be restored unless they are taken in charge by the Federal Government and made into grazing reserves. It is hard to

imagine any other condition under which permanent systems of management and control will be introduced and the grazing lands restored to their original carrying capacity. From the beginning, then, in this line of work, the Nevada Experiment Station will find itself hampered by unfortunate economic conditions which threaten heavy loss to the sheep and cattle industries in Nevada.

Project 11—Relative Feeding Value of Crops of Alfalfa. Hatch Fund. Project Leader, Dr. C. A. Jacobson. Begun in 1916; to terminate in 1918.

From early in the history of the State of Nevada there has been a belief that there is a great difference in feeding value between first-crop and second-crop alfalfa hay. In some of the valleys it is stated that the first crop is far better for milk production than the second crop. In others the statement is made that first-crop hay is coarse and full of weeds, and that second-crop hay should always be fed in preference to the first crop for milking purposes.

The first crop comes on slowly through a growing period extending from early spring until the latter part of June. In the fields this gives pepper-grass and other weeds a chance to grow to their full height. The second crop comes on very rapidly during the heat of summer, smothering the weeds by this rapid growth, and maturing within a period not much longer than six weeks. It may readily be true, therefore, that there is a distinct difference in feeding value, and it may even be true that first-crop hay from certain valleys may have a higher feeding value than hay of the second crop, while in other valleys conditions may be reversed. Dr. Jacobson has therefore undertaken to find out by carefully planned chemical tests whether there is any definite chemical difference in the composition of the two crops.

Analyses were made of third-crop hay from regions where a third crop is cut, together with tests of alfalfa grown in the southern part of Nevada where as high as six crops are cut annually. It is planned to compare the results of chemical analyses with actual feeding tests made under controlled conditions in the Department of Dairying in the School of Agriculture. This project will be completed in the fiscal year 1917-1918.

ADAMS FUND PROJECTS

Project 12—Snow Studies and Snow Surveying. Adams Fund. Project Leader, Dr. J. E. Church, Jr., assisted by S. P. Fergusson. Begun in 1906; concluded in 1917.

This group of studies terminated with the close of the present fiscal year; and, while the Department of Meteorology will in the future be included in the Experiment Station, no further allotments of funds are now planned for the support of the present projects. The history of the frost and snow studies conducted by the Nevada Experiment Station is of interest.

Frost Forecasting:

In 1906 Dr. Church thought it possible to forecast frosts for valley regions from adjacent mountain peaks sooner and more accurately than they could be predicted from stations in the valley. This led to the establishment of a meteorological station equipped with elaborate automatic recording instruments upon Mount Rose (10,800 feet), a peak of the Sierra Nevada near Reno. The theory upon which this

project was based was that changes in weather conditions take place in the upper air sooner than at the lower levels. However, a considerable mass of published data then existing, simultaneous mountain and valley records, gave ample evidence in favor of the opposite conclusion. That

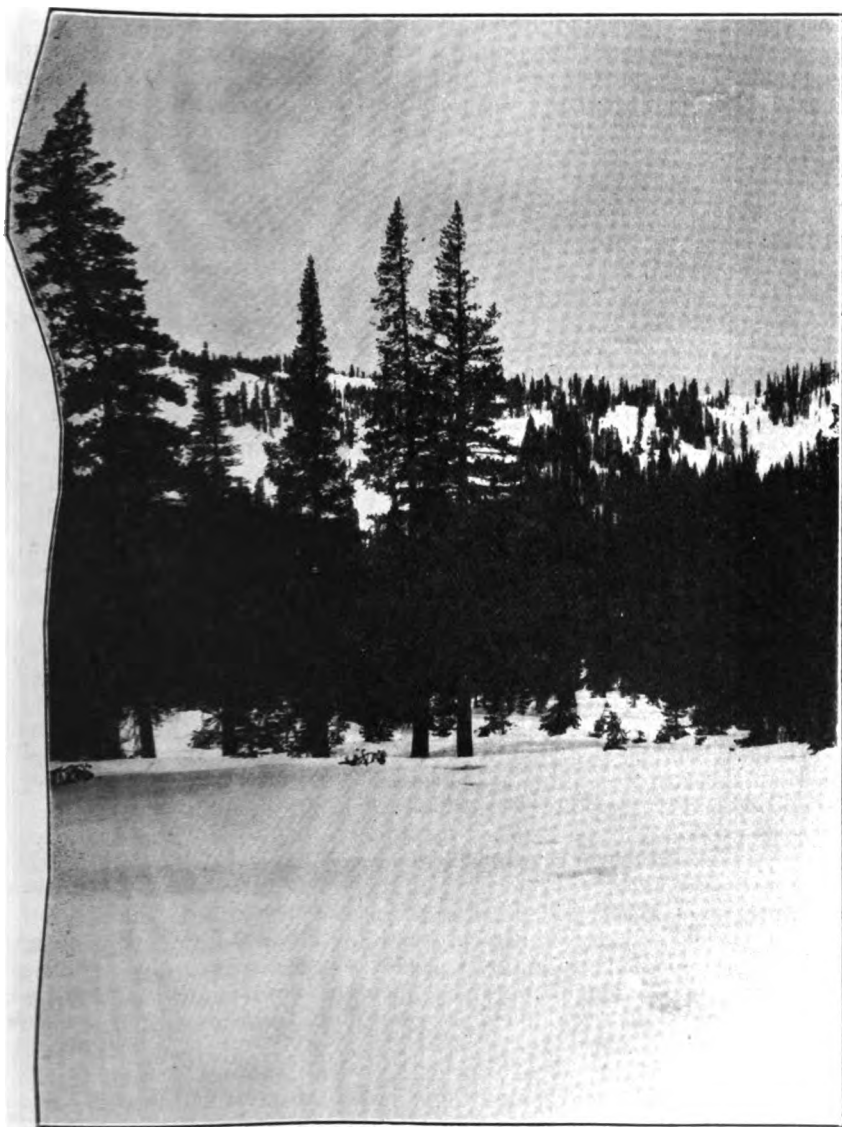


Figure 4—Excellent location for snow sampling. Protected by forest timber.

is, the records made upon Mount Washington and at Burlington, Vt.; upon Pike's Peak and at Colorado Springs, Colo.; upon Fuji, Japan, and at Yamanaka; all pointed to the same conclusion—that tempera-

ture changes in the valley and upon adjacent mountain summits normally occur at the same time.

On Mount Rose all the earliest instrumental records pointed to the same conclusion—that the temperature of the air rises and falls on the summit at the same time that it does in the valley, unless clouds lying between summit and valley or local winds varying in direction cause changes to occur sooner at one point than at the other.

Moreover, from the beginning the question of the relation of this project to Nevada agriculture was a difficult one. Nevada is a hay and livestock region; and, while the development of apple orchards might be assisted by more accurate methods of predicting spring frosts, the fact that changes occur simultaneously on the summit and in the valley gives no hope whatever of more accurate methods of frost prediction than those in general use.

After the Mount Rose record had been continued for many years with simultaneous records made by similar instruments at Truckee, Cal., and at Fallon, Nevada, it was so evident that the conclusion based on the earlier published records was entirely valid that from an administrative standpoint it became essential to terminate the work upon this project. S. P. Fergusson was therefore called upon to summarize the data and the project was ended by the publication of Bulletin No. 85, June, 1915, Nevada Agricultural Experiment Station.

Forest and Snow Studies:

Early in the history of the Mount Rose Weather Observatory, Dr. Church began making observations upon the degree to which the pine and fir forests of the Sierra Nevada Mountains protect the snow, both during the period of its accumulation and during the melting period. These studies became a project in the Department of Meteorology in 1906, under the title, "The Relation of Forests to the Conservation of Snow." It was the purpose of this project to determine in a general way the extent and manner in which the accumulation and melting of snow may be influenced by the presence or absence of pine and fir timber. In these studies Dr. Church has aimed to determine in the Tahoe basin the degree to which mountain forests aid in the accumulation of snow and retard its melting.

Like the project on frost forecasting from mountain tops, this project has always lacked a clear relationship to Nevada agriculture, although not for the same reasons. The former project was based upon a mistaken theory, while the latter, although sound in theory, could have no direct effect upon agricultural practise. Practically all farming in Nevada is dependent upon melting snow for its existence; and any information which might be obtained upon the protection afforded by forests to snow would seem of value to Nevada farmers and to farmers throughout the arid West.

Still, it is evident that such information would affect forest practise rather than farm practise, since the whole region under study from the time when the project was founded has been a part of the United States Forest Reserve. It is evident, therefore, that there was no threat of injury to Nevada agriculture from destructive methods of lumbering in the Tahoe region; and plainly, since nearly all the watershed forests of the Sierra Nevada are included in forest reserves, it is evident that this question of the degree of protection given by forests

to snow is not an agricultural problem. It is a minor problem in forestry lying wholly within the jurisdiction of the United States Forest Service. That service is fully aware of the danger of destructive lumbering and is pledged to the policy of protecting watershed forests. This project, therefore, has little direct connection with western agriculture; it has, moreover, been largely complete since 1910; and, as there seems to be no valid reason for its further continuance, it is not planned to support it any longer from the funds of the Agricultural Experiment Station.

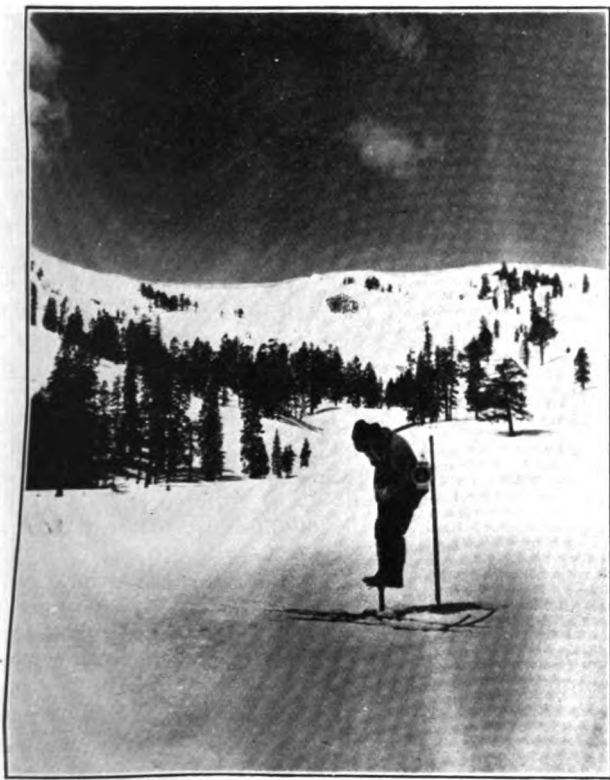


Figure 5—Location for sampling protected by surrounding mountains.
Mount Rose sampler in use.

Snow Surveying and Run-Off Forecasting:

In order to give a definite agricultural connection to the work of the Department of Meteorology, it seemed best in the years between 1913 and 1917 to develop as the major work of this department a study of methods of snow surveying by means of the Mount Rose snow sampler, devised by Messrs. Church and Fergusson for use in connection with the timber and snow studies. It was the purpose of this project to determine whether it is possible to make in the early spring accurate forecasts of the amount of water which will be available for storage during the melting period and for irrigation late in the summer. It is clear that while these studies originated in a project entitled "Timber

and Snow," they constitute a wholly different line of work and should be considered a distinct project.

The agricultural connection is evident from the fact that important changes in farming practise may be based upon early and accurate forecasts of water to be available. Thus, a warning given early in the spring that there will be little or no water for the late irrigations might cause the planting of wheat instead of potatoes for that year; since it would be possible to grow a crop of wheat in a season when water shortage in late summer would make it out of the question to mature a crop of potatoes. Grain may be planted instead of alfalfa that year, since the latter would be apt to dry up and die late in the summer.

Throughout the arid West water is being used more and more economically over a steadily increasing acreage, and it is becoming more important to know long in advance how much water will be available for the late irrigations. For these reasons in the fiscal year 1913-1914 snow surveying and run-off forecasting were made the major work of the Department of Meteorology and continued to be the principal feature of that department until the present year. Elaborate equipment and ample assistance were provided in order to make it possible to carry the experimental work in snow surveying rapidly to a valid conclusion. Interest in the results of this project shown in other States and in other countries where agriculture is dependent upon the melting snow for irrigation indicate the importance of this change of plan in the Department of Meteorology.

The data obtained in the last four years taken in connection with earlier work upon this project have rendered this line of study relatively complete, and in the coming fiscal year the method of snow surveying will be presented in full detail in bulletin form. There is every prospect that the method will be adopted in other States and other countries, and that it will be of great value toward the solution of problems of water storage, power production, and irrigation.

The termination of the frost studies, the completion of studies of timber and snow, and the perfection of Dr. Church's method of snow surveying make it desirable at the present time to terminate active work upon this group of projects and to make no further allotments from the station funds to the Department of Meteorology in the absence of problems in Nevada agriculture for whose solution meteorological science is required.

Project 13—Chemistry of Nitrogen Fixation. Adams Fund. Project Leader, Dr. C. A. Jacobson. Begun in 1909, carried on by Dr. Jacobson in European laboratories September, 1911, to January, 1913. Project then active in Nevada to June 30, 1917, but not included in active list of 1917-1918.

When this project was founded in 1909 it was not based upon any problem in the agriculture of the State of Nevada, but its purpose was to throw some light upon the problem of nitrogen fixation in plants by stating in chemical terms the process of fixation which takes place in the alfalfa plant. It was assumed from the beginning that the alfalfa plant obtains its nitrogen by a symbiotic relationship with certain bacteria present in nodules upon the roots of the plant. From the outset, however, Dr. Jacobson studied the nitrogenous compounds pres-

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in alfalfa hay, extracting them by steeping the hay in water, alcohol, or other solvents.

In the present fiscal year a very careful study of the history of the project made it evident that there are good reasons why it should be continued upon the active list of the Nevada Experiment Station. The work of Greaves, Stewart, and Hirst of Utah, page 2 *Journal of Agricultural Research*, Vol. IX, No. 9, makes it appear that the alfalfa plant obtains the bulk of its nitrogen through its developing root system, much as do other plants, and that nitrogen fixation through a relationship with associated bacteria is only incidental. Moreover, it is evident that the study of nitrogenous compounds found in alfalfa hay can contribute only indirectly to the solution of the fixation problem.

In order to state the nature of this process in chemical terms would seem advisable if not essential, as a preliminary, to study cultures of nodule bacteria grown under laboratory conditions and determine whether they fix nitrogen under such conditions, and, if so, in what form. It is essential, likewise, to study nitrogenous compounds found in the living plant rather than in the hay, since the latter is exposed to the sun after cutting and has gone through a process of curing and drying which can hardly fail to destroy or to modify nitrogenous compounds found in the living plant.

On the whole, therefore, since the project promises no contribution to any of the actual problems of Nevada agriculture, and since under any circumstances it would be necessary to lay down a different working plan and to develop the work along quite different lines, it seems that during the war it will be best to discontinue the project; and it is not planned to include it on the active list in the coming fiscal year. Practically all data obtained from this project have been published by Dr. Jacobson in contributions to chemical journals made from time to time as units of the work were completed. This method of publication makes it unnecessary to issue any portion of the work in bulletin form.

Project 14—Plant Poisons. Adams Fund. Project Leader, Dr. C. Jacobson. Begun in 1909; continuous.

This project is closely connected with Project 6, "The Study of Poisonous Range Plants." It is desirable to isolate the active poison from the range plants known to be poisonous or suspected of possessing poisonous properties. After the poison has been separated and its chemical nature determined, it then becomes readily possible to find in what portion of the plant it occurs and at what season. This knowledge may easily have a direct influence upon methods of handling live stock on the range. Certain plants which are poisonous at one stage of growth may be harmless at another; to avoid poisoning it may be necessary merely to graze such plants at the proper season. It may be necessary, however, to develop studies of the effect of poisoning upon experimental animals under laboratory conditions in the Department of Veterinary Science, in order to find whether any poisonous plant under test is equally poisonous to sheep, cattle, and horses. It has been found in some instances that plants poisonous to cattle are harmless to sheep.

As a part of the University's study of poisonous range plants this project will make information regarding them gained from range

observations more accurate and more thoroughly reliable. It is planned that in the near future three departments of the Station will give a considerable amount of time to the study of poisonous range plants. The Department of Range Management will study the habits of these plants in the field, the localities in which they grow, conditions favorable to their reproduction and spread, and the extent and character of losses which they cause. This department will likewise study methods of handling sheep and cattle on the range which will tend to prevent poisoning; with methods of destroying certain plants which can be locally exterminated at small expense.

The Department of Veterinary Science will determine the classes of stock which are poisoned, the symptoms of poisoning, and the amount of poisonous material required to produce death; and in cooperation with the Department of Chemistry will work upon methods of treatment or possible antidotes. The Department of Chemistry will determine the chemical nature of the poisons and the part of the plant in which the poison is found, the stages of growth in which the plant is dangerous and the season of the year when the poison is most to be dreaded. Upon the work of these three departments will be based recommendations and warnings to western stockmen. This line of work will for several years be one of the most important activities of the Nevada Experiment Station.

Project 15—Equine Anemia (Swamp Fever). Adams Fund. Project Leader, Dr. W. B. Mack, assisted by Dr. Edward Records, 1915-1917. Begun in 1908; continuous.

For a great many years there has existed in Nevada, as elsewhere in the United States and other countries, an obscure disease of horses in which the animal becomes emaciated and bloodless, dying perhaps after several years or within a few months or weeks. The indefinite character of the disease and the fact that it is produced experimentally only with great difficulty made the subject a particularly hard one to study. The project was founded in September, 1908, in response to a demand for assistance from farmers and stock raisers in eastern Nevada. Very careful work was done for several years until in 1915 the disease almost disappeared and has not yet reappeared to an extent which gives an opportunity for further study.

During the progress of this study Dr. Mack has kept in close touch with workers in other States and in Europe who are studying the same disorder. No one has found it possible to discover the cause of the disease. Papers published by Dr. Mack have been accepted in Europe as standard contributions and have added to the existing knowledge of the subject. The most important contribution to agriculture made in connection with this problem by the whole group of workers in America and Europe, including Dr. Mack, is that under some conditions the disease may be spread by infected drinking water, and that its spread may be checked by promptly killing and burning diseased animals.

To veterinary science Project 14 has contributed painstaking and accurate descriptions of equine anemia, descriptions which separate it clearly from similar diseased conditions due to other causes. The work done by Dr. Mack has found wide acceptance among other workers on the same subject in America and Europe. The papers published at the

Nevada Experiment Station are quoted as authoritative additions to the literature.

Project 16—Hemorrhagic Disease in Cattle. Adams Fund. Project Leader, Dr. W. B. Mack, assisted by Dr. Edward Records. Begun in 1914; still in progress.

In western Nevada and southern California on elevated valley pastures, especially where water is apt to gather and stand, a hemorrhagic disease in cattle, closely resembling anthrax, has been recognized for several years. Frandsen reports the finding of a single case of disease in cattle where the symptoms resembled anthrax, "but all indications pointed to hemorrhagic septicemia" (Annual Report, Nevada Station, 1904). The primary purpose of this project has been to find out the nature of this disease; that is, to separate it clearly from anthrax and to determine whether or not it is caused by the comparatively well-known hemorrhagic-septicemia organism.

Thus far, after prolonged and careful study, it has been found impossible to determine the cause of the disease with certainty. Positive diagnoses of hemorrhagic septicemia have been made in a number of cases. From the majority of cases, however, the hemorrhagic-septicemia bacteria have not been isolated and up to the present time the diagnosis remains in doubt. Oddly enough, very promising methods of prevention and cure have been devised by Dr. Mack and his assistant, Dr. Records, prior to a complete diagnosis of the disease. From the standpoint of general hygiene it is clearly important to drain wet meadow lands, since the disease occurs most commonly on badly drained and wet lands.

Project 17—Hog-Cholera Serum Purification. Adams Fund. Project Leader, Dr. W. B. Mack, assisted by Dr. Edward Records. Begun in 1915; to terminate in 1918.

The standard method of preventing hog cholera consists in the administration of serum prepared from the blood of hogs which have been rendered highly immune to this disease. The method of treatment is highly successful and is widely applied. Wherever it has been used, however, certain difficulties have arisen. In the first place, the dose required is very large, and the amount of inert material, such as dead blood-cells, fibrin, etc., which is introduced, may cause considerable local irritation. Moreover, it has not been found possible wholly to free hog-cholera serum from contaminating bacteria even when the serum is prepared under the best conditions.

The administration of hog-cholera serum may therefore be followed by local abscesses which are often serious and sometimes destructive. In this project it is Dr. Mack's purpose to precipitate the active principle of hog-cholera serum and to isolate this active principle from all contaminating bacteria and dirt. If this proves to be possible, the bad after-effects of the standard serum treatment will be done away with; and it will be possible greatly to reduce the dosage.

Sufficient progress has been made already to show the feasibility of separating the protective properties of hog-cholera serum in a highly concentrated form. There is a strong probability that a product may be prepared free from bacteria or other contaminating matter. The process of preparation has not yet been perfected and work will be in

progress for another year. At the close of the fiscal year 1917 the success of this project seems to depend upon the possibility of devising suitable methods for a final filtration of the serum by which it may be freed completely from bacteria.

Project 18—Contagious Epithelioma in Chickens. Adams Fund. Project Leader, Dr. W. B. Mack, assisted by Dr. Edward Records. Studied under Hatch Fund, 1914 to 1916; continued under Adams Fund, 1916 to 1917.

Contagious epithelioma is a disease of chickens or perhaps a group of diseases known to poultrymen by a number of common names, among them chicken-pox, diphtheria, roup, canker, etc. When the disease appears in a flock of chickens it is quite apt to sweep through the entire flock, destroying large numbers, or even nearly all.

The disease is common in fowls the world over. The most characteristic symptoms are scabby sores which break out on the combs and wattles and around the eyes of the infected birds. Puffy swellings may close the eyes entirely. The throat is frequently attacked and death often occurs because the larynx is obstructed by false membranes.

Study of this disease was begun originally under the Hatch Fund. The purpose of the project was then to determine whether it would be feasible to prepare a vaccine from sick birds in infected flocks and by means of this vaccine to put a stop to the spread of the disease. Vaccines were prepared by crushing scabs from the combs, cheesy masses from the interior of the head, and pieces of membrane from the throat, and grinding them up in distilled water with a little salt. The material was then filtered through cotton and was heated for one hour. The virulence of the material thus prepared was so reduced by heating that small doses could be safely injected into healthy birds.

Crude vaccines prepared in this way proved very successful in promptly checking the spread of the disease in flocks where it had broken out. Beside this, the vaccine showed a genuine curative quality. Attempts were made to filter and to purify the vaccine, but purification greatly reduced its effectiveness.

Thus, this early work under the Hatch Fund showed that information is lacking upon a great many matters connected with the growth of the virus which causes the disease. In order to study contagious epithelioma from a scientific standpoint, therefore, the project was outlined under the Adams Fund, covering a number of topics upon which further information is needed. This work will be continued for several years as material is found for further study. Thus far the project has been of great value to the poultry industry in Nevada and elsewhere. Between four and five thousand birds have been treated by vaccination, and invariably the disease has been checked.

The growing importance of the local poultry industry has been mentioned above. Contagious epithelioma has helped to prevent its further development. Thus, the discovery of a reliable method of checking this disorder has made it possible for Drs. Mack and Records to give exceedingly valuable assistance toward the development of chicken-raising in Nevada.

Project 19—Biting Flies of Cattle. Adams Fund. Project Leaders, J. L. Webb, U. S. Department of Agriculture, and S. B. Doten, Nevada Experiment Station. Begun in August, 1916; probable termination, 1919.

For several years past complaints have been received at the Nevada Station of the injury done by biting flies which attack cattle on mountain pastures. The statement has been made repeatedly that cattle are annoyed by these flies that during the height of the summer on the rest of pasturage they do not put on flesh as they should and a considerable financial loss results.

It was therefore thought best to outline as a station project the study of the biting flies affecting cattle in western Nevada and adjacent portions of eastern California. Because of the fact that a part of these studies would necessarily be made outside of this State a cooperative arrangement was made with the Department of Agriculture, Bureau of Entomology, by which the work would be shared equally by the Nevada Experiment Station and the Federal Bureau. In August, 1916, Messrs. J. L. Webb and F. C. Bishopp of the United States Department of Agriculture spent some time visiting the fly-infested regions of Nevada and California to find a locality where this line of study could be conducted to advantage. Antelope Valley, lying partly in Nevada and partly in California, was chosen as a particularly desirable site.

In the fiscal year 1916–1917 a working plan was laid down in detail, and careful field studies were begun in April, 1917. An insectary was constructed at Topaz, California, the most convenient postoffice for the Antelope Valley region. With the assistance of Mr. Rufus Ogilvie, Assistant in Entomology, Nevada Experiment Station, Mr. Webb is now carrying on active field and laboratory work. There is every prospect that these studies will have to be continued for a number of years before the life-histories of these biting flies have been worked out in sufficient detail to permit recommendations for methods of control.

Project 20—White Sage Studies. Adams Fund. Project Leader, C. E. Fleming. Begun in October, 1916; continuous.

This project was originally proposed by Dr. P. B. Kennedy of the Department of Agronomy, University of California, whose studies of native Nevada forage plants have been mentioned in connection with Project 8. Dr. Kennedy early recognized the fact that there is no forage plant in the native forage of the State whose importance equals that of the white sage (*Eurotia lanata*) as winter feed. From the history of the State the sheepmen and cattlemen have regarded the white sage pastures as the best winter range to be found in Nevada. The white sage, however, like the rest of the native forage plants, has been greatly abused under unrestricted grazing. It is a very common thing nowadays to have stockmen ask: "What are we going to do when the white sage is gone?" They take it for granted that the white sage will be practically exterminated. In many ways this will be a serious matter for the livestock industry, and to

some stock owners it will prove to be a positive disaster. It is quite evident that the Nevada Experiment Station can do no more at present on this project than to study in detail the habits of growth of the white sage and the conditions under which it reproduces and spreads, and the grazing conditions and methods which are particularly harmful.

It seems exceedingly probable that Mr. Fleming will be able to devise methods of range management which will permit the continuous use of the white sage ranges without harm to this exceedingly valuable forage plant. It should be clearly stated, however, that these methods can be applied only upon ranges under control. Competitive grazing means ruin, in the long run, to the white sage range and it means little else to most of the other range country in Nevada. On white sage ranges under private control it should be possible to introduce method of grazing which will prevent further injury and will slowly restore the carrying capacity of the range.

Project 21 — Anthrax-Serum Purification. Adams Fund. Project Leader, Dr. W. B. Mack. Assisted by Dr. Edward Records. Begun in 1916; probable termination, 1919.

This project grew out of Project 3, Hatch Fund, "The Preparation of Anthrax Serum." It was shown in the former project that anthrax serum may profitably be used in immunizing range cattle against anthrax. A highly potent serum was produced, but against it could be urged some of the same objections spoken of concerning the standard hog-cholera serum.

The success attained by Drs. Mack and Records in the precipitation of the active principles of hog-cholera serum led to the application of similar methods of precipitation of anthrax serum, the object being of course, to separate the active principles from bacteria and other contaminating material. The administration of such purified serum should prevent serum shock or sickness; the dosage would be greatly reduced and the liability of complications arising from contaminating bacteria would be nearly eliminated. Enough progress has been made in the fiscal year 1916-1917 to show that the active principle of this serum can be precipitated readily.

This project will be continued through the coming year in the hope of devising a practical method of purifying and concentrating the anthrax serum.

DEPARTMENT OF AGRONOMY

PROJECT 1—IRRIGATION EXPERIMENTS

Irrigation Experiment with Alfalfa, Potatoes, and Wheat

The object of this investigation was to determine the critical stages in the irrigation of each crop and to show at what stages of growth the plants are best able to be deprived of an application of water without causing serious injury to the crops; also to determine the amount of water required for the greatest production, and the production with small applications at different stages. With potatoes and alfalfa a comparative study was made of the plants at different stages of growth with different methods of irrigation to determine the proper stages to irrigate these crops, and the proper amount of water to use at each application for the best results. With wheat the object was to determine at which stage or stages of growth an application of water may be eliminated without greatly affecting the yield of grain, and to determine whether or not two applications of water prove as effective as three or more applications with the same amount of water used.

Alfalfa

The irrigation experiment with alfalfa included 12 plats which were separated by levees four feet wide and high enough to prevent any overflow from one plat to another. Six-inch, nine-inch, and twelve-inch applications were made at the following stages of wilting:

- (1) Before plants show need of water by dark-green color of foliage.
- (2) When plants show need of water by dark-green color of foliage.
- (3) When plants have suffered, as indicated by dark-green color of foliage and drooping leaves.

During the season of 1916 two crops of hay were harvested on July 10 and September 27, respectively. Samples of hay from each plat with the two cuttings were selected for a determination of moisture and nitrogen content.*

Irrigation of Alfalfa

Average Results for 1915 and 1916

	No. of plat	Depth of application—Inches	Total irrigation—Inches	Total water content—Per cent	Proportion of leaves—Per cent	Yield per acre—Tons	Yield per acre-foot of water—Tons
Plants never allowed to show need of water.	2	6	63	84.2	36.3	6.33	1.22
	5	9	58	86.0	38.1	6.38	1.31
	8	12	72	81.4	37.6	7.32	1.23
Irrigated when plants show need of water by dark-green color of foliage.	3	6	42	78.6	40.1	5.70	1.64
	6	9	40	81.2	42.1	5.62	1.66
	9	12	48	77.8	39.3	6.21	1.62
Irrigated when plants show need of water by dark-green color of foliage and drooping leaves.	4	6	21	78.8	48.8	3.73	2.16
	7	9	27	77.5	48.6	4.30	1.91
	10	12	30	72.8	37.3	5.20	2.09

The results showed that with the 6-, 9-, and 12-inch applications the average total irrigation, the total water content of the plant and the yield per acre decreased, while the proportion of leaves to stems and the yield per acre-foot of water increased with the advance in the wilting stage. The average variations found were from 64 to 21

*The nitrogen content was determined by the official method used by the Bureau of Chemistry, U. S. Dept. of Agriculture.

inches in total irrigation, 83.9 to 76.4 per cent in total water content, 37.3 to 43.2 per cent in proportion of leaves to stems, 6.68 to 4.41 tons in yield per acre, and 1.29 to 2.05 tons in yield per acre-foot of water.

Although the greatest yield of 7.32 tons per acre was found with the heaviest total irrigation of 72 inches, the yield per acre-foot of water was only 1.23 tons. These results indicate that the most economical use of water would be with the 12-inch applications given between the last two stages of wilting with a total irrigation of from 30 to 48 inches, or an average of 36 inches with an average yield of 5.7 tons per acre, or 1.85 tons per acre-foot of water.

In the three stages of irrigation the 6-inch applications gave the lowest yields and the 12-inch applications the highest yields with but little variation in yield per acre-foot of water. Where the total yield per acre was greatest the yield per acre-foot of water was low and the quality of hay was inferior to that of the other plats, due to the large proportion of coarse stems to leaves. The results clearly illustrate the importance of the time of application of water, since a gradual decrease in yield is noted in the different plats with the same applications of water as the wilting stage advances before the water is applied. Alfalfa responded better than wheat and potatoes to the heavy applications of water.

Potatoes

The irrigation experiment with Burbank potatoes included nineteen plats. The potatoes were planted May 29, 1916, in rows three feet apart and about fourteen inches apart in the row. The potatoes were irrigated by means of comparatively deep furrows three feet apart. Three-inch, six-inch, and nine-inch applications of water were made at the following stages of growth:

- (1) Before plants show a tendency to wilt.
- (2) When plants show a tendency to wilt.
- (3) When all leaves wilt down once.
- (4) When all plants fail to revive at night.

The crop was harvested on October 1, 1916. Of the four rows in each plat the two outside rows were eliminated to prevent as far as possible any variation due to lateral diffusion of water from the adjoining plats. Three hills in different parts of each plat were selected for a chemical analysis of the starch content.*

Irrigation of Potatoes
Average Results for 1914, 1915, and 1916

	No. of plat	Depth of irrigation—Inches	Total irrigation—Inches	Water content—Per cent	Starch content—Per cent	Yield per acre—Pounds	Yield per acre-foot of water—Pounds
Plants never allowed to wilt.....	2	3	21	76.7	68.3	12,566	7.181
	6	6	28	76.4	65.4	10,367	4.443
	10	9	36	77.3	68.3	13,380	4.460
Irrigated when plants show tendency to wilt.....	3	3	16	78.4	64.4	14,010	10.507
	7	6	20	77.3	63.2	9,587	5.752
	11	9	27	77.2	65.2	7,876	3.500
Irrigated when all plants wilt down once.....	4	3	10	78.4	56.2	11,151	13.380
	8	6	14	78.5	62.4	9,611	8.238
	12	9	18	76.1	64.8	6,992	4.661
Irrigated when plants fail to revive at night.....	5	3	6	78.7	59.3	6,081	12.062
	9	6	8	78.4	58.8	5,798	8.697
	13	9	9	78.6	59.8	4,069	5.425

*The starch content was determined by means of the direct acid hydrolysis. See Bulletin 107, p. 58, Bureau of Chemistry, U. S. Dept. of Agriculture.

The yields of potatoes in 1915 were materially decreased by dry rot, and in 1916 by an unfavorable season. However, all plats appeared to be equally affected; thus the comparative results are about as valuable as with greater production. The results showed that with the 3-, 6-, and 9-inch applications, the average total irrigation, the starch content, and the yield per acre decreased while the yield per acre-foot of water increased with the advance in the wilting stage. The average variations found were from 28 to 8 inches of total irrigation, 67.3 to 59.3 per cent of starch, 6.05 to 2.64 tons per acre, and 2.68 to 4.36 tons per acre-foot of water.

The best average results were obtained with the 3-inch applications at the different stages of wilting, comparatively little variation being shown between 6- and 9-inch application. For the three-year period, the highest yield of 7 tons per acre was obtained with an average total irrigation of 16 inches with 3-inch applications given when the plants showed a tendency to wilt, and the yield per acre-foot of water was 5.25 tons. The next best yield of 6.69 tons per acre was secured with four 9-inch applications given before plants showed a tendency to wilt, although the yield per acre-foot of water was only 2.23 tons per acre. Where the plants wilted down before irrigation, the potatoes made a second growth which resulted in lowering their starch content. The proportion of scabby potatoes was greatly increased in those plats which received a total irrigation of 24 inches or more of water.

Wheat

The irrigation experiment with wheat included 60 plats. The plats were 22 feet wide by 165 feet long and were separated by levees 4 feet wide. Marquis wheat was used. The seed was treated for smut with a solution of formalin (one pound of formaldehyde to 40 gallons of water) and was sown April 5, 1916, with a double-disk drill, about two inches deep, using 75 pounds of seed per acre. In the irrigation of the wheat 3-inch, 5-inch, and 7-inch applications were made at the following stages of growth:

- | | | |
|-----------------|-----------|-----------|
| 1. Five leaves; | 3. Bloom; | 5. Dough. |
| 2. Boot; | 4. Milk; | |

In this test the comparison was made of plats receiving an irrigation at each of the five stages of growth with plats in which an irrigation was omitted at each of the five stages; with plats in which irrigations were omitted at any two of the five stages of growth, and with plats that received the same amounts of water in only two applications—one before and one after heading.

The wheat plats were harvested from August 6 to August 12 with the grain binder. The plats receiving the least total irrigation, when an irrigation at the milk stage was omitted, were the first to reach maturity. Four feet of grain around the outside of each plat was eliminated to prevent as far as possible any error due to seepage from one plat to another. The wheat was threshed with a small thresher operated by a 6-horsepower gasoline engine. This machine made possible the thorough cleaning of the grain and caused practically no grain to be lost in threshing.

Irrigation of Wheat

Table Showing Increase in Yields of Seven-Inch Applications over Three-Inch Applications in Percentabe for 1914, 1915, and 1916

	Yield per acre in bushels								Average increase
	3-in. application			Average	7-in. application			Average	
	1914	1915	1916		1914	1915	1916		
One irrigation omitted at—									
Five-leaf	21.2	26.2	31.3	26.2	32.6	36.8	35.3	34.9	33.2
Boot	17.1	15.3	29.6	20.7	31.8	28.9	20.1	27.2	31.4
Bloom	19.4	14.0	24.9	19.4	24.2	26.3	31.7	27.4	41.3
Milk	27.1	28.6	29.2	28.3	26.2	28.4	37.0	30.5	7.8
Dough	29.4	21.8	32.8	28.0	32.3	25.1	34.2	30.5	8.9
Two irrigations omitted at—									
Five-leaf and boot	21.8	14.8	20.7	19.1	22.5	18.6	17.1	19.4	1.6
Five-leaf and bloom	15.9	20.7	30.9	22.5	22.9	16.9	25.9	21.9	2.7
Five-leaf and milk	22.5	25.8	33.4	27.2	19.2	31.8	43.3	30.1	10.7
Five-leaf and dough	10.1	32.4	35.7	26.1	29.8	27.2	34.6	30.5	16.9
Boot and bloom	7.8	12.8	21.0	13.9	12.6	12.5	25.6	16.9	21.6
Boot and milk	14.8	21.3	29.4	21.8	16.9	21.2	36.8	25.0	14.7
Bloom and milk	15.6	20.3	29.4	21.8	18.3	19.3	34.4	24.0	10.1
Bloom and dough	16.2	19.1	37.6	24.3	23.9	24.8	39.3	29.3	20.6
Milk and dough	20.0	28.1	37.8	28.6	25.0	30.5	34.4	30.0	4.9
No irrigations omitted	26.0	26.9	32.1	28.3	24.2	26.1	43.1	31.1	9.9

One Irrigation Omitted—The results are strongly in favor of the 7-inch applications. The average yield for the 7-inch applications was 24.5 per cent greater than that for the 3-inch applications. The highest yield of 34.9 bu. per acre was obtained when the irrigation at the five-leaf stage was omitted. When irrigations were omitted at the milk and dough stages, respectively, the same yield of 30.5 bu. per acre was secured.

The lowest yields with both 3- and 7-inch applications were found when irrigations were omitted at the boot and bloom stages, respectively.

When a 7-inch application was given at each stage of growth, or a total irrigation of 35 inches, the yield was 31.1 bu. per acre or 12.2 per cent less than where only 28 inches of water were applied and the irrigation omitted at the five-leaf stage. This was due chiefly to the greater development of root system where the first irrigation was omitted, and at the same time the plants did not suffer from lack of sufficient moisture before the irrigation at the boot stage.

Two Irrigations Omitted—Here also the results are in favor of the 7-inch applications, although not to such a great extent as where only one irrigation was omitted. The average yield for the 7-inch applications was 11.5 per cent greater than that for the 3-inch applications.

The four highest yields were obtained when irrigations were omitted at the five-leaf and dough, five-leaf and milk, milk and dough, and bloom and dough, in the order named, the greatest production being 30.5 bu. per acre, and the lowest 29.3 bu. per acre, or a difference of about 4 per cent.

The three lowest yields with the 7-inch applications averaging 19.4 bu. per acre were obtained when the irrigations were omitted at the five-leaf-and-bloom, five-leaf-and-boot, and the boot-and-bloom stages, the last yield being 16.9 bu. per acre.

The low yields with both 3-inch and 7-inch applications when irrigations at the boot and bloom stages were omitted, indicated that the

critical stage in the irrigation of wheat was between the boot and the stages. When irrigations were omitted at the five-leaf-and-milk and five-leaf-and-dough stages, practically no difference was noted in the yield, the average being 30.3 bu. per acre.

Irrigation of Wheat—Two Irrigations
Average Results for 1914, 1915, and 1916

Irrigation—Inches	After heading	Yield in bushels				Average yield per acre-foot of water
		1914	1915	1916	Average	
6		18.7	21.4	42.1	27.4	27.4
9		23.7	21.2	36.8	27.2	21.8
12		27.0		31.9	29.5	19.7
6		16.7	18.9	31.5	22.4	17.9
9		25.8	24.8	43.0	31.3	20.9
12		23.5	26.6	37.3	29.1	18.6
6		19.7	27.2	36.8	27.9	18.3
9		19.1	25.3	34.2	26.2	15.0
12		22.7	27.0	37.3	29.0	14.5

When only two irrigations are possible the two 9-inch applications, before and one after heading, gave the greatest yield of 31.3 bu. per acre or 11.5 per cent less than the highest yield when one 7-inch application was omitted at the five-leaf stage, or slightly greater than the two 7-inch applications were given at each stage of growth. The irrigation before heading provided more water than the crop needed to the best advantage. The maximum yield was obtained with 14.5 inches of water. With a total irrigation of less than 18 inches the yield was considerably lower; whereas a total irrigation of 24 inches and two 12-inch applications produced a yield of 29 bu. per acre, or 8 per cent less than with the two 9-inch applications.

The yield of 27.4 bu. per acre-foot of water was greatest with the least total irrigation of 12 inches and least, or 14.5 bu., with the least total irrigation of 24 inches. The most practical method used in this experiment was when the highest yield was recorded. Where only two applications were given to the crop the yields were generally lower throughout than where a greater number of applications with the same total amount of water was given, thus indicating that only in cases of water shortage is it advisable to use only two applications in preference to three or four applications, as shown in the results of this experiment where the fields of grain are generally much higher. At the same time where only two irrigations are possible, the yield of 31.3 bu. per acre indicates a very profitable crop.

Soil Moistures—Irrigation of Alfalfa, Average 1915–1916
Average Results of first four feet in depth in per cent

Soil sample taken	6-inch applications	9-inch applications	12-inch applications
Soil before plants show need of water—			
Before first irrigation	14.5	13.7	17.8
Before second cutting	15.9	18.8	16.4
Per cent of decrease	9.7*	37.2*	8.5
Soil when plants show need of water by dark-green color of foliage—			
Before first irrigation	13.4	14.9	15.3
Before second cutting	13.3	13.6	12.8
Per cent of decrease	.07	9.6	21.1
Soil when plants show need of water by dark-green color of foliage and drooping leaves—			
Before first irrigation	12.0	14.7	14.9
Before second cutting	11.6	11.6	9.1
Per cent of decrease	3.4	26.7	64.4

*Increase.

Alfalfa

The results show that with the 6- and 9-inch irrigations given before the plants showed need of water, the soil moisture contents before the first irrigation were less than before the second cutting by 9.7 per cent and 37.2 per cent, but with the 12-inch applications, greater by 8. per cent. With the 6-, 9-, and 12-inch applications given when plant showed need of water by dark-green color of foliage, the soil moisture contents before the first irrigation were greater by .07 per cent, 9. per cent, and 21.1 per cent, and in the last wilting stage greater by 3. per cent, 26.7 per cent, and 64.4 per cent, respectively. This decrease in soil moisture in the two wilting stages was very slight with 6-inch irrigations, considerably greater with 9-inch irrigations, and very much greater with 12-inch irrigations. The decrease also became greater as the wilting stage advanced.

Where the heaviest application of 72 inches of water produced the greatest yield of 7.32 tons per acre, the soil moisture content before the second cutting was 8.5 per cent greater than before the first irrigation.

Where the smallest application of 21 inches of water produced the lowest yield of 3.7 tons per acre, the soil moisture content was 3.4 per cent less than before the first irrigation. However, the yield per acre-foot of water was 2.09 tons, or 70 per cent greater than where the highest yield was secured with the greatest total irrigation.

The greatest variation was found in the last stage of wilting with the 12-inch irrigations, where the soil moisture content at the second cutting was 64.4 per cent less than before the first irrigation.

Soil Moistures—Irrigation of Potatoes, Average 1914, 1915, and 1916

Average Results of first four feet in depth in per cent

Soil samples taken	3-inch applications	6-inch applications	9-inch application
Irrigated before plants show tendency to wilt—			
Before first irrigation	20.7	19.4	20.
Before harvest	19.8	20.1	19.
Per cent decrease	4.5	3.6*	2.
Irrigated when plants show tendency to wilt—			
Before first irrigation	18.9	20.9	18.
Before harvest	18.7	20.4	19.
Per cent decrease	1.1	2.4	4.
Irrigated when leaves wilt down once—			
Before first irrigation	19.5	16.4	19.
Before harvest	18.9	17.7	17.
Per cent decrease	3.1	7.9*	9.
Irrigated when plants fail to revive at night—			
Before first irrigation	19.2	18.7	18.
Before harvest	17.5	16.6	18.
Per cent decrease	9.7	12.6	2.

*Increase.

Potatoes

With the 3-inch irrigations at the different stages of wilting the soil moisture contents before harvest were slightly less than before the first irrigation. This decrease is most evident in the last stage of wilting with 9.7 per cent.

With the 6-inch applications an increase is shown in the first and third stages of wilting, while in the second and last stages the soil moisture content was greater than before the first irrigation, amounting to 12.6 per cent in the last stage of wilting.

With the 9-inch irrigations a decrease was shown in the first and third stages of wilting, amounting to 9.1 per cent in the third stage.

while in the second and the last stages of wilting the soil moisture content at harvest was slightly greater than before the first irrigation.

Where the heaviest yield of 7 tons per acre was produced with a total irrigation of 16 inches of water in 3-inch applications given when the plants first showed a tendency to wilt, the soil moisture content before harvest was only 1.1 per cent less than before the first irrigations. However, the yield per acre-foot of water was 5.25 tons.

Where the lowest yield of 2.03 tons per acre was produced with one 9-inch application at the last wilting stage, the soil moisture content at harvest was 2.1 per cent greater than before the first irrigation. However, the yield per acre-foot of water was only 2.71 tons, or 92.6 per cent less than that of the highest yield with 16 inches of total irrigation.

No uniform variations occurred in soil moisture content with potatoes as were found with alfalfa in the various stages of wilting and with different depths of applications of water, with the exception of the slight decrease at harvest with the 3-inch irrigations at the different stages of wilting.

Soil Moisture—Irrigation of Wheat, Average 1914, 1915, and 1916
Average Results of first four feet in depth in per cent

Soil samples taken	One irrigation omitted			Two irrigations omitted		
	Irrigation omitted	3-inch application	7-inch application	Irrigation omitted	3-inch application	7-inch application
Before first irrigation	None	21.3	19.2	Five-leaf	21.6	20.1
Before fourth irrigation	None	15.8	17.4	and	17.6	18.0
Before harvest	None	17.8	16.9	boot	18.5	19.6
Average		17.8	17.7		19.2	19.8
Before first irrigation	Five-leaf	20.4	20.0	Five-leaf	21.7	17.5
Before fourth irrigation	and	16.6	19.6	and	15.7	15.1
Before harvest	stage	16.1	20.6	bloom	18.7	19.8
Average		17.7	20.1		18.7	17.5
Before first irrigation	Boot	20.3	20.4	Five-leaf	19.7	18.4
Before fourth irrigation	stage	16.1	19.0	and	15.0	17.2
Before harvest		16.6	21.0	milk	15.9	18.6
Average		17.7	20.1		16.7	18.0
Before first irrigation	Bloom	18.6	20.2	Five-leaf	19.2	18.4
Before fourth irrigation	stage	11.9	17.2	and	17.6	17.5
Before harvest		16.0	22.3	dough	17.7	18.4
Average		15.5	19.9		18.2	18.1
Before first irrigation	Milk	19.0	17.9	Boot	19.9	21.0
Before fourth irrigation	stage	16.1	18.6	and	12.4	15.8
Before harvest		17.4	18.9	bloom	19.3	21.0
Average		17.5	18.5		17.2	19.3
Before first irrigation	Dough	18.9	19.5	Boot	17.2	17.5
Before fourth irrigation	stage	15.6	19.6	and	14.8	16.1
Before harvest		13.0	17.4	milk	16.6	16.2
Average		15.8	18.9		16.2	16.6
Before first irrigation				Bloom	17.6	17.0
Before fourth irrigation				and	13.8	15.7
Before harvest				milk	15.8	18.6
Average					15.7	17.1
Before first irrigation				Bloom	20.9	18.4
Before fourth irrigation				and	14.3	17.2
Before harvest				dough	18.0	19.9
Average					17.7	18.5
Before first irrigation				Milk	18.5	17.4
Before fourth irrigation				and	14.3	17.7
Before harvest				dough	13.8	16.4
Average					15.5	17.1

Table Comparing Soil Moisture Content Before First Irrigation and Before the Irrigation at the Milk Stage, with 3-inch and 7-inch Applications.

Average Decrease before Irrigation at Milk Stage in Per Cent for 1914, 1915, and 1916

One irrigation omitted			Two irrigations omitted		
Irrigation omitted	3-inch application	7-inch application	Irrigation omitted	3-inch application	7-inch application
None	34.8	10.3	Five-leaf and boot	22.7	11.7
Five-leaf	22.9	2.0	Five-leaf and bloom	38.2	15.9
Boot stage	26.0	7.3	Five-leaf and milk	31.3	7.0
Bloom stage	56.3	17.4	Five-leaf and dough	9.1	5.1
Milk stage	18.0	3.7*	Boot and bloom	60.5	32.9
Dough stage	21.1	.5*	Boot and milk	16.2	8.7
			Bloom and milk	20.3	8.3
			Bloom and dough	46.1	7.0
			Milk and dough	15.8	1.6*

*Increase.

Comparison of Soil Moisture Content before First Irrigation and before Irrigation at the Milk Stage

One Irrigation Omitted—The soil moisture contents before the irrigation at the milk stage were less than before the first irrigation, except with omissions of 7-inch applications at the milk and dough stages when slight increases of 3.7 per cent and .5 per cent, respectively, were found.

The greatest decrease of 56.3 per cent with 3-inch applications, and 17.4 per cent with 7-inch applications occurred where the irrigation at the bloom stage was omitted. The yields per acre were 80 per cent and 27.4 per cent less than the highest production of 34.9 bu. per acre with one 7-inch irrigation omitted at the five-leaf stage.

The smallest decrease of 18 per cent with 3-inch applications was with an irrigation omitted at the milk stage, whereas with 7-inch irrigations an increase of 3.7 per cent occurred.

Little variation in soil moisture content was found with both 3-inch and 7-inch applications where irrigations were omitted at the five-leaf milk and dough stages. In these plats the yields per acre varied from 26.3 to 28.3 bushels with 3-inch applications and from 30.5 to 34.9 bushels with 7-inch applications.

The average decrease in the soil moisture content with 3-inch applications was 28.9 per cent, while with 7-inch applications it was only 4.5 per cent.

Two Irrigations Omitted—The soil moisture contents before the irrigation at the milk stage were less than before the first irrigation, except where two 7-inch irrigations were omitted at the milk and dough stages when a slight increase of 1.6 per cent occurred.

The greatest decrease of 60.5 per cent with 3-inch applications, and 32.9 per cent with 7-inch applications, occurred where two irrigations were omitted at the boot and bloom stages. The yields per acre were 151 per cent and 129 per cent less than the highest production with one 7-inch irrigation omitted at the five-leaf stage.

In the four plats where one of the irrigations omitted was at the bloom stage, the average decrease in soil moisture content was 41.3 per cent with 3-inch applications and 16 per cent with 7-inch applications. The average yields per acre were 69.4 per cent and 51.7 per cent less than the highest production of 34.9 per acre.

The smallest decrease occurred when two irrigations were omitted

at the five-leaf-and-dough and the milk-and-dough stages, with an average of 12.2 per cent for 3-inch and 1.8 per cent for 7-inch applications. The yields per acre were 27.8 per cent and 16.3 per cent less than the highest production of 34.9 bu. per acre.

Where two irrigations were omitted at the five-leaf-and-boot, five-leaf-and-milk, and boot-and-milk stages, the decrease in soil moisture content varied from 16.2 per cent to 31.3 per cent with 3-inch, and from 7 per cent to 11.7 per cent with 7-inch applications. The average yields per acre were 53.7 per cent less with 3-inch and 40.7 per cent less with 7-inch applications than the highest production of 34.9 bu. per acre.

The average decrease in the soil moisture content with 3-inch applications was 28.9 per cent, while with 7-inch applications it was only 10.6 per cent.

Table Comparing Soil Moisture Content before First Irrigation and at Harvest with 3-inch and 7-inch Applications

Average Decrease at Harvest in Per Cent for 1914, 1915, and 1916

One irrigation omitted			Two irrigations omitted		
Irrigation omitted	3-inch application	7-inch application	Irrigation omitted	3-inch application	7-inch application
None	19.6	13.6	5-leaf and boot	16.8	2.5
5-leaf	26.7	3.0*	5-leaf and bloom	16.0	13.2*
Boot stage	22.3	2.9*	5-leaf and milk	23.9	1.1*
Bloom stage	16.2	10.3*	5-leaf and dough	8.5	0
Milk stage	9.1	5.5*	Boot and bloom	3.1	0
Dough stage	45.4	12.2*	Boot and milk	3.6	8
			Bloom and milk	11.4	9.4
			Bloom and dough	16.1	7.5*
			Milk and dough	19.5	6.1

*Increase.

Comparing Soil Moisture Content before First Irrigation and at Harvest

One Irrigation Omitted—The soil moisture contents at harvest were less than before the first irrigation with 3-inch applications, but greater with 7-inch applications, except where an irrigation was omitted at the dough stage, when a decrease of 12.2 per cent occurred.

The greatest decrease of 45.4 per cent with 3-inch and 12.2 per cent with 7-inch applications occurred where an irrigation at the dough stage was omitted. The yields per acre were 24.6 per cent and 14.4 per cent less than the highest yield of 34.9 bu. per acre with one 7-inch irrigation omitted at the five-leaf stage.

The smallest decrease of 9.1 per cent with 3-inch applications occurred with an irrigation omitted at the milk stage, when the yield per acre was 23.3 per cent less than the highest yield. With 7-inch irrigations the greatest increase in soil moisture content at harvest occurred with an irrigation omitted at the bloom stage, where the yield per acre was 27.4 per cent less than the highest yield.

With 3-inch applications where an irrigation was omitted at the dough, five-leaf, boot, and bloom stages, the decrease in soil moisture content at harvest was 45.4 per cent, 26.7 per cent, 22.3 per cent, and 16.2 per cent, while the corresponding yields per acre were 28.0, 26.2, 20.7, and 19.4 bushels, respectively.

These results indicate that in the above stages of irrigation in the order named, as the decrease in soil moisture content at harvest becomes greater, a comparative increase in yield per acre occurs.

With 7-inch applications when an irrigation was omitted at the five-leaf, boot, and milk stages, an average increase of 3.8 per cent occurred in soil moisture content at harvest, whereas with an irrigation omitted at the bloom stage, the increase was 10.3 per cent, but the yield per acre was 13.6 per cent less than the average of the three plats, the first of which produced the highest yield in the experiment of 34.9 bu. per acre with one 7-inch application omitted at the five-leaf stage.

The average decrease in soil moisture content with 3-inch applications was 23.9 per cent, but with 7-inch applications an average increase of 1.5 per cent occurred.

The variations in soil moisture content at harvest in relation to yield per acre were not as uniform as those before the irrigation at the milk stage.

Two Irrigations Omitted—The soil moisture contents at harvest were less than before the first irrigation, except where two 7-inch irrigations were omitted at the five-leaf-and-bloom, milk-and-dough, and five-leaf-and-milk stages, where corresponding increases of 13.2 per cent, 7.5 per cent, and 1.1 per cent, respectively, occurred.

With 3-inch applications the greatest decrease of 23.9 per cent in soil moisture at harvest occurred when two irrigations were omitted at the five-leaf-and-milk stages, and the yield per acre was 27.2 bu. With the next greatest decrease of 19.5 per cent with two 3-inch irrigations omitted at the milk-and-dough stages, the yield was 28.6 bu. per acre, which was the highest yield with two 3-inch irrigations omitted.

The smallest decrease of 3.1 per cent in soil moisture at harvest with 3-inch applications occurred when two irrigations were omitted at the boot and bloom stages, when the yield was 13.9 bu. per acre, or 105 per cent less than the highest yield of 28.6 bu. with two 3-inch applications omitted at the milk and dough stages.

With two 3-inch irrigations omitted at the five-leaf and boot stages, the decrease in soil moisture at harvest was 16.8 per cent, and the yield per acre of 19.1 was next to the lowest yield of 13.9 bu. recorded above.

With two 7-inch applications omitted at the various stages of growth, no uniform variations occurred in soil moisture content in relation to the yield per acre, as was the case with the 3-inch applications.

The greatest decreases at harvest, 48 per cent and 9.4 per cent, were found with two 7-inch applications omitted at the boot-and-milk and bloom-and-milk stages, where the yield of 21.8 bu. per acre was the same for both plats.

The greatest increase in soil moisture at harvest of 7.5 per cent and 13.2 per cent occurred when two 7-inch applications were omitted at the bloom-and-dough and five-leaf-and-bloom stages, where the corresponding yields were 24.3 and 22.5 bu. per acre, respectively.

Two Consecutive Irrigations Omitted—Where 3-inch and 7-inch irrigations were omitted at two consecutive stages of growth, a decrease was found in soil moisture content at harvest, except with two 7-inch irrigations omitted at the boot and bloom stages in which the soil moisture content was the same as before the first irrigation.

The decreases in soil moisture content at harvest with 3-inch irrigations omitted at the milk and dough, bloom and milk, five-leaf and boot, and boot and bloom, were 19.5 per cent, 11.9 per cent, 16.8 per cent and 3.1 per cent, with corresponding yields of 28.6, 21.8, 19.1, and 13.9

per acre, while with 7-inch applications, the decreases in soil moistures were 6.1 per cent, 9.4 per cent, 2.5 per cent, and .0 per cent with corresponding yields of 30.0, 24.0, 19.4, and 16.9 bu. per acre.

When 3-inch and 7-inch irrigations were omitted at the boot and bloom stages, the decrease in soil moisture content at harvest was the smallest as compared with the lowest yields per acre.

The greatest decrease in soil moisture content at harvest occurred with 3-inch applications omitted at the milk and dough stages, accompanied by the highest yield per acre. But with 7-inch applications, where irrigations were omitted at the bloom and milk stages, although the decrease was only slightly less than with irrigations omitted at the milk and dough stages, the highest yield of 30.0 bu. per acre was obtained.

Generally, with two consecutive irrigations omitted, a high yield was accompanied by a considerable decrease in soil moisture content at harvest, and vice versa.

The average decrease in soil moisture at harvest where two irrigations were omitted was 13.3 per cent with 3-inch, and .5 per cent with 7-inch applications.

Soil Moistures—Irrigation of Wheat, Two Irrigations, One before and One after Heading. Average 1914, 1915, and 1916

Average Results of first four feet in depth in per cent

Soil samples taken	Irrigation—Inches		Soil moistures			
	Before heading	After heading	1914	1915	1916	Average
Before first irrigation	6	6	19.8	18.1	18.5	18.8
Before second irrigation			17.3	13.1	17.0	15.8
Before harvest			18.3	15.7	17.1	17.0
Average			18.5	15.6	17.5	17.2
Before first irrigation	6	9	18.9	19.8	18.2	19.0
Before second irrigation			15.2	16.3	15.6	15.7
Before harvest			18.2	13.3	16.8	16.1
Average			17.4	16.4	16.9	16.9
Before first irrigation	6	12	15.5	22.1	18.8	18.8
Before second irrigation			17.7	16.2	16.6	16.8
Before harvest			17.1	14.6	19.1	16.9
Average			16.8	17.6	18.2	17.5
Before first irrigation	9	6	12.8	20.1	18.1	17.0
Before second irrigation			16.7	14.7	15.6	15.7
Before harvest			15.8	14.8	12.5	14.4
Average			15.1	16.5	15.4	15.7
Before first irrigation	9	9	18.5	20.8	18.9	19.4
Before second irrigation			16.6	14.3	16.2	15.7
Before harvest			16.3	14.6	14.1	15.0
Average			17.1	16.6	16.4	16.7
Before first irrigation	9	12	17.8	19.8	17.3	18.3
Before second irrigation			15.6	13.1	16.9	15.2
Before harvest			16.3	14.8	16.0	15.7
Average			16.6	15.9	16.7	16.4
Before first irrigation	12	6	20.7	21.7	18.7	20.4
Before second irrigation			17.9	15.0	17.3	16.7
Before harvest			15.3	16.6	13.8	15.2
Average			18.0	17.8	16.6	17.4
Before first irrigation	12	9	19.1	20.6	18.5	19.4
Before second irrigation			17.8	16.5	17.8	17.4
Before harvest			14.8	15.1	15.0	15.0
Average			17.2	17.4	17.1	17.3
Before first irrigation	12	12	19.1	19.4	20.0	19.5
Before second irrigation			17.7	16.5	18.8	17.7
Before harvest			15.7	17.8	15.2	16.2
Average			17.5	17.9	18.0	17.8

Soil Moistures—Irrigation of Wheat, Two Irrigations, One before and One after Heading

Average Decrease in Soil Moisture Content before Second Irrigation and at Harvest in Per Cent for 1914, 1915, and 1916

Irrigation—Inches		Decrease of soil moisture before second irrigation	Decrease of soil moisture at harvesting	Yield per acre—Bushels	Yield per acre-foot of water—Bushels
Before heading	After heading				
6	6	19.0	10.6	27.4	27.4
9	6	8.3	18.0	22.4	19.9
12	6	22.1	34.2	27.9	18.3
6	9	21.0	18.0	27.2	21.8
9	9	23.4	29.3	31.3	20.9
12	9	11.6	29.3	26.2	15.0
6	12	11.9	11.2	29.5	19.7
9	12	20.4	16.5	29.1	16.6
12	12	10.2	20.4	29.0	14.6

The greatest decrease of 23.4 per cent in soil moisture content before the second irrigation occurred was found with a 9-inch irrigation before and after heading, accompanied by the highest yield of 31.3 bu. per acre; while the smallest decrease of 8.3 per cent was found with a 9-inch irrigation before and a 6-inch irrigation after heading, accompanied by the lowest yield of 22.4 bu. per acre.

The greatest decrease of 34.2 per cent in soil moisture content at harvest was found with a 12-inch irrigation before heading and a 6-inch irrigation after heading, the yield being 27.9 bu. per acre.

The smallest decrease at harvest occurred with a 6-inch irrigation before and after heading, accompanied by a yield of 27.4 bu. per acre, and the highest yield of 27.4 bu. per acre-foot of water.

Increasing the depth of application before heading caused a greater decrease in per cent of soil moisture at harvest and a corresponding decrease in yield per acre-foot of water. This variation in depth of application after heading was not as uniform, since with 9-inch irrigations before heading, the yield per acre-foot of water was slightly greater with the 9-inch than with the 6-inch application after heading.

Monthly Precipitation Record, 1916*

Month	1914 Actual inches	1915 Actual inches	1916 Actual inches	Average inches 1914-1916	Average for past 28 years
January.....	5.46	0.55	6.76	4.26	2.02
February.....	0.86	2.59	0.59	1.35	1.20
March.....	Trace	0.15	0.33	0.16	0.83
April.....	0.70	0.33	0.11	0.38	0.46
May.....	0.11	0.62	Trace	0.21	0.73
June.....	0.29	0.00	0.11	0.13	0.28
July.....	Trace	0.04	Trace	0.01	0.36
August.....	0.38	Trace	0.04	0.14	0.31
September.....	0.05	0.06	0.35	0.15	0.28
October.....	0.16	Trace	1.13	0.43	0.34
November.....	Trace	0.28	0.06	0.11	0.68
December.....	0.70	1.09	0.97	0.92	1.07
Totals.....	8.71	5.62	10.44	8.25	8.56

*Information secured from the U. S. Weather Bureau, Reno, Nevada.

These results are especially interesting from the fact that during no one month of the growing season throughout the three-year period was sufficient rainfall received to affect the soil moisture content; that is, the small amount of precipitation at any one time was subject to evaporation within the few hours which followed. The greatest

monthly precipitation of .7 inches during this period was received in April, 1914, and most of this came before the first irrigation. The results of these experiments are, therefore, based entirely on water applied by irrigation.

PROJECT 2—VARIETY TESTING AND CROP IMPROVEMENT

These experiments included row tests and also plat tests of several important varieties of wheat, oats, barley, corn, field peas and beans, millets, potato and field beets, the object being to determine the varieties of these crops which show special adaptation to the local conditions by their hardiness and yielding capacity, and to improve these varieties by selection. By testing out these varieties in various parts of the State where the altitude and climatic conditions are different, it will be possible to determine the highest producing varieties of cereals and forage crops for all agricultural districts of the State.

Cereals

The experiment with varieties of wheat, oats, and barley included 24 varieties of wheat, 28 of oats, and 26 of barley. Each variety was represented by one row 100 feet long. The seed was planted March 27, 1916, about one and one-half inches deep in rows one foot apart. The results of the fifteen highest producing varieties were as follows:

RESULTS WITH WHEAT

Variety	Yield per acre of grain—Pounds			
	1914	1915	1916	Average
Galgalos Fife C. I. 2396		4,492	3,471	3,882
White Club	3,294	3,096	3,856	3,482
Delfance		3,023	3,857	3,435
Blue Stem	3,318	2,856	3,848	3,340
New Zealand	3,096	3,043	3,697	3,279
Colorado No. 50	2,730	3,625	3,452	3,269
Glyndon No. 692		2,274	3,385	3,105
Marquis	2,808	3,505	2,979	3,097
Chal	3,222	3,145	2,879	3,082
Minnesota No. 163		2,692	3,365	3,029
Festas C. I. No. 1596		2,534	3,304	2,919
Minnesota Fife	2,100	3,643	2,978	2,907
White Australian	816	3,299	4,052	2,722
Kubanka		2,210	3,194	2,702
Stanley White	2,724	2,667	2,554	2,648

In this experiment Galgalos Fife was the highest producer for the years 1915 and 1916, yielding 66.4 bushels per acre. The next four highest producers varied in yield from 54.7 to 58.0 bushels per acre.

RESULTS WITH OATS

Early Mountain No. 2 C. I. 656		2,185	3,042	2,614
Early Mountain (Ida.)		2,041	2,187	2,114
Black American C. I. 549		1,844	1,937	1,891
Banner C. I. 751		1,922	1,853	1,888
White Danish		2,011	1,308	1,660
Siberian C. I. 741		2,054	1,222	1,638
Ont. Agr. College No. 72		1,847	1,055	1,451
Big Four	813	1,895	1,614	1,441
Danish	1,124	1,678	1,494	1,432
Siberian (Nev.)	788	2,064	1,441	1,431
Garton No. 572	663	2,228	1,340	1,409
Wisconsin Ped. No. 1	1,060	1,950	1,161	1,390
Swedish Select C. I. No. 134		1,741	1,014	1,378
Kheron	1,425	1,658	994	1,359
Colorado Black	640	1,975	1,412	1,342

These results showed a marked increase in the production of the

Early Mountain variety over the previous year, the yield being 9 bushels per acre for 1916. The average production for this variety for the two periods was 81.75 bushels per acre. This was the only variety which was not seriously affected by shattering of the seed, due to blighting of the panicles before the plants had matured. With most of these varieties over one-half of the grain had shattered before the plants were ready for harvest.

RESULTS WITH BARLEY

Variety	Yield per acre of grain—Pounds			
	1914	1915	1916	Average
New Zealand		2,740	4,917	3.8
Blue Ribbon (Mont.)	3,040	3,443	4,025	3.5
Wash. Brewing		3,125	3,823	3.4
C. I. 679 "France"	1,489	3,280	4,924	3.2
White Smyrna	2,395	2,522	4,667	3.1
Princess		2,012	4,352	3.1
California Feed	2,367	2,814	3,975	3.0
Trebi C. I. 936		2,197	3,886	3.0
Chevalier	2,720	2,680	3,625	3.0
Hanna	1,618	3,340	3,991	2.9
Moravian	3,086	2,502	3,294	2.9
Hells Hanna No. 682	3,023	1,550	4,186	2.9
Oregon No. 19785	1,465	2,734	4,314	2.8
Poda C. I. 652	1,123	3,141	4,063	2.7
White Moravian	3,315	1,561	3,432	2.7

In this test the New Zealand variety showed the highest average yield for the two-year period of 80 bushels per acre, while the Montana Blue Ribbon had an average production for the three-year period of 7 bushels per acre. The results favored the two-rowed varieties.

Forage Crops (Including Root Crops)

RESULTS WITH CORN GROWN FOR ENSILAGE

Variety	Yield per acre of fodder—Pounds				
	1913	1914	1915	1916	Average
Improved Leaming	25,795	19,513	18,709	26,264	22.5
Sweepstakes			17,177	26,732	21.9
Colorado Yellow Dent			15,317	24,570	19.9
Disco 90-Day Seed Corn				19,746	19.7
Pride of Minnesota	21,835	17,450	13,132	24,571	19.2
Swadley's Field Corn			13,705	24,037	18.8
Sure Crop	21,615	18,706	14,802	21,552	18.6
Huron Dent	22,071	15,649	14,115	22,535	18.5
Minnesota No. 13	22,550	16,550	10,435	24,194	18.5
Pride of the North	21,580	12,343	15,109	20,619	17.4
Wisconsin Yellow Dent	18,562	16,281	11,811	21,614	17.0

In this experiment each variety was represented by four rows 16 feet long and 3 feet apart. The seed was planted with a hand corn planter about 3 inches deep. Furrows were made between the row for irrigation of the crop. During the four-year period the improved Leaming variety was the highest producer with 11.3 tons per acre. In no year did any variety mature grain, but in occasional favorable seasons certain types produced profitable crops of forage, which provided a very palatable satisfactory food for cattle and sheep when placed in a silo and fed in connection with alfalfa. In 1916 a killing frost occurred on September 10 which stopped the growth of all varieties while the grain was still in the milk stage, and on the following two days the crop was harvested.

Forage Crop for Seed Production

Variety	Yield per acre of seed—Pounds			
	1914	1915	1916	Average
Sudan grass		1,099	1,912	1,506
Field pea, Kaiser		1,198	2,135	1,667
Field pea, Amorita		973	2,069	1,521
Field pea, Salo		901	2,066	1,484
Field pea, Green Canada		869	1,778	1,324
Field pea, Blackeye Marrowfat	450	900	2,347	1,232
Colorado Stock	563	1,180	1,774	1,172
Marrowfat	180	752	2,502	1,155
Charleston No. 12887	301	834	1,953	1,029
White Marrowfat	450	798	1,898	1,023
White Colorado	339	875	1,611	942
White Canada	450	706	1,582	913

In this test each variety was represented by one row 100 feet long. The rows were two feet apart with the exception of the Sudan grass, in which the rows were 30 inches apart. These results show a great variation in yield from year to year, and, even though excellent yields were produced with certain types in 1916, it is evident that unless the climatic conditions are favorable successful results cannot be assured.

Forage Crops for Hay Production
RESULTS WITH FIELD PEAS

Variety	Yield per acre of forage—Pounds			
	1914	1915	1916	Average
Sudan grass		2,656	7,596	5,121
Green Canada	5,278	2,864	4,423	4,186
White Canada	4,800	2,595	4,370	3,922
Colorado Stock	3,738	3,487	4,063	3,764
Blackeye Marrowfat	4,860	1,897	4,128	3,623
White Marrowfat	3,270	2,005	3,402	2,892
Green Canada (Elko Dry Farm)		3,170	3,980	3,575
Gold Vine (Elko Dry Farm)		2,410	4,407	3,409
White Canada (Elko Dry Farm)		2,654	3,689	3,162
Bangala (Elko Dry Farm)		2,114	2,972	2,543

In this experiment the seed was planted April 16, 1916, in rows 165 feet long and 30 inches apart, four rows representing each variety with the exception of Sudan grass which was represented by two rows each 50 feet in length. In 1916, Sudan grass produced 3.79 tons per acre, while the average for the two years was 2.5 tons per acre. Green Canada field pea showed the heaviest production of forage from this crop, or 2.09 tons per acre.

RESULTS WITH MILLETS

Variety	Yield per acre of forage—Pounds			
	1914	1915	1916	Average
Siberian	6,596	3,547	6,149	5,430
Hog (Elko Dry Farm)		4,251	6,168	5,210
Kurch (Elko Dry Farm)		4,076	6,227	5,147
Sudan grass		2,656	7,596	5,121
Common (Elko Dry Farm)		4,627	5,135	4,881
Colorado Golden	5,546	2,237	4,681	4,121
Early Fortune	4,683	2,389	4,907	3,996
Hungarian (Elko Dry Farm)		2,649	4,744	3,697

In this experiment the seed was planted May 25, 1916, in rows 10 feet long and 30 inches apart, two rows representing each variety. In the 1916 results, all millet varieties were surpassed by Sudan grass in production of forage, while for the two- and three-year averages the Siberian, Hog, and Kurch showed an increased production. The planting of Sudan grass in rows 30 inches apart instead of 36 inches was undoubtedly partly responsible for the remarkable increase in yield.

RESULTS WITH POTATOES

Variety	Yield per acre—Pounds				
	1913	1914	1915	1916	Average
Great Divide.....	21,700	13,025	6,169	7,750	12,161
Burbank.....	16,520	10,027	8,096	5,931	10,204
Peerless.....	18,460	6,152	6,438	6,516	9,887
Early Russet.....	19,220	3,562	7,827	4,579	8,797
Early Red.....	12,160	4,222	5,979	3,954	6,584
Netted Gem (Nev.).....				6,440	6,440

The potatoes were planted May 23, 1916, in rows 265 feet long and 3 feet apart. Great Divide and Burbank varieties showed the highest average yields for the four-year period with 12,161 and 10,204 pounds per acre, respectively. These two varieties have been grown in Nevada for many years and indicate the value of well-selected home-grown seed over that introduced from other States.

RESULTS WITH BEET VARIETIES

Variety	Yield per acre—Pounds			
	1914	1915	1916	Average
Our Ideal mangels.....	16,616	17,689	60,096	31,404
Mammoth Long Red mangels.....	14,994	13,155	54,856	27,635
Sugar-beet (Nevada seed).....		12,465	41,770	27,118
Golden Tankard mangels.....	17,172	13,886	48,751	26,603
Giant Feeding mangels.....	12,929	20,975	43,065	25,656
Sugar-beet (Foreign seed).....	16,275	14,506	41,596	24,126

The beet varieties were planted on April 6, 1916. The seed was sown at the rate of 20 pounds per acre about one inch deep in rows 100 feet long and 2 feet apart. In this test the aim was to compare the values of the sugar-beets, half sugar-beets, and mangels, as a supplementary feed in fattening cattle, sheep, and swine. This table shows that the mangel produced a much higher yield of roots, but, due to the high content of carbonaceous food in the sugar-beet, the latter had a food value much greater than the mangel. The sugar content varied from 19.5 per cent in the sugar-beet to 4.5 per cent in the mangel. These results indicate that the sugar-beet is the most valuable root crop for feeding purposes under Nevada conditions.

RESULTS OF CEREAL VARIETIES IN PLATS

Variety	Yield per acre—Pounds	Yield per acre—Bushels
<i>Wheat—</i>		
White Club	3,331	55.5
Bloestem	2,736	45.6
Minnesota No. 163	2,496	41.6
<i>Oats—</i>		
Great Dakota	1,125	35.2
Wisconsin Fed. No. 1	884	27.0
Kberson	504	16.0
<i>Barley—</i>		
Chevalier	2,858	59.5
Moravian	2,720	56.7

These varieties of cereals were among the highest producers during the two preceding seasons in the row variety test.

The White Club wheat and Great Dakota oats were outstanding high yielders as compared with the other varieties under experiment. However, with the two varieties of barley tested, the yields showed but little variation. Both of the barleys were of the two-rowed type.

Cooperative Variety Tests—Variety tests of wheat and barley were conducted in 1916 on the farms of Tom Dolf and W. H. Williams of Fallon, in cooperation with F. B. Headley, Superintendent of the United States Experiment Farm at Fallon. The following table includes the results for 1916 and the average yields for 1915 and 1916 in bushels per acre:

Wheat				Barley			
Variety	1915	1916	Average	Variety	1915	1916	Average
Little Club	45.5	52.3	48.9	Coast	42.5	36.8	39.6
Rieti	42.7	48.5	45.6	Kents	29.9	39.9	34.9
Dicklow	41.6	42.3	42.0	Haunchen	33.0	30.3	31.6
Marquis	39.0	42.9	41.0	Chevalier	—	31.3	31.3
Defiance	38.5	42.1	40.3	Svanhals	29.9	29.3	29.6
Sonora	37.3	41.0	39.2	Nepal*	25.4	27.0	26.2
Bloestem	40.5	37.4	39.0				
Ghera	35.0	36.2	35.6				

*This is a hullless barley with a standard weight per bushel of 60 pounds, but for comparison by actual weight with the other varieties 48 pounds per bushel was used.

Little Club was the highest producer of the wheat varieties with an average yield of 48.9 bu. per acre for the two years. Coast, or what is commonly known as California Feed barley, was the highest yielding variety of barley with 39.6 bu. per acre. The yield of 2,934 pounds of Little Club wheat was 54.2 per cent greater than the yield of 1,903 pounds of the highest yielding barley.

DEPARTMENT OF VETERINARY SCIENCE AND BACTERIOLOGY

We began the year with the following projects, the first two of which have been completed and terminated:

Hatch Fund:

- Project 3—Anthrax Serum.
- Project 4—Chicken Cholera.

Adams Fund:

- Project 15—Equine Anemia.
- Project 16—Hemorrhagic Disease in Cattle.
- Project 17—Hog-Cholera Serum Purification.
- Project 18—Contagious Epithelioma in Chickens.

A new project, entitled Project 21—"Anthrax-Serum Purification," has been undertaken under the Adams Fund.

A statement of the inception, progress, and present status of the various projects follows.

PROJECT 3—ANTHRAX SERUM

When this project was proposed in 1914 and later undertaken, we were confronted with a very serious situation with respect to anthrax, and felt keenly the need of an agent with which to combat it in addition to vaccine. The situation was the worst it had been for several years, the loss the heaviest. A large number of cattle and other domestic animals died, and a former State Veterinarian became infected and died.

Previous to 1915 there was no provision for state control of the acute infectious diseases of live stock in the State, nor had anything comparable to the present service been attempted. There were even no authorized facilities for precise diagnosis and advice. The necessity had not yet become sufficiently apparent to develop the requisite legislation, which usually follows public necessity or demand.

In the anthrax outbreaks of 1914 our assistance was sought. The laboratory examinations resulted in a diagnosis of anthrax in several localities. Previous to that time the identity of the trouble was a subject of controversy and doubt. The diagnoses were largely speculative, varying according to individual information and opinion. After an accurate diagnosis of anthrax was established advice logically followed. Owners were advised to remove their herds from infected to clean ground and to vaccinate by the double method of Pasteur. In several instances the removal of cattle to clean ground was impossible, no such places being available. Vaccination increases the susceptibility during a certain period while immunity is being established. During this period the loss may be increased temporarily, although ultimately the cattle treated are enabled to resist infection.

Difficulties then arose over vaccinating twice, from ten to fourteen days apart. To round up and vaccinate cattle is laborious; and range cattle particularly suffer from too much driving and handling, especially in summer. We insisted, however, upon the use of the

double method, and most owners who vaccinated that season followed our advice. Those who used a single vaccination had less favorable results than those who employed the double method.

Anthrax is usually acute in cattle, but that summer we saw many animals with a less acute type which lived long enough to afford reasonable opportunity for treatment had one been available. Anti-anthrax serum was at the time being produced and used with some success in Europe, but the United States was slow in undertaking its production and no serum was available.

We were very much dissatisfied with the weapons available in the existing situation and felt keenly the need of more adequate equipment. We believed that a potent antianthrax serum could be prepared, with which immunity could be immediately conferred and which, in addition, might be successfully used in the treatment of subacute cases. Could that hope be realized, cattle which were not yet infected could be immunized by the simultaneous administration of serum and strong virus, and safely left to graze upon infected land. Cattle which were already infected could be treated with large doses of the serum alone and many saved which otherwise must perish.

With these objects in view, September 1, 1914, we outlined a project for the preparation of antianthrax serum and to ascertain its cost and practicability under Nevada conditions. Two burros, contributed for the purpose by an interested private livestock corporation, were immunized, and kept upon an infected ranch. They were carried to the point where they could withstand the injection of large doses of the virulent cultures of the anthrax organism and were shipped to Reno. For want of suitable quarters for the work and delay in conducting them, work on this project was postponed until about January 1, 1916. This delay was particularly unfortunate, but appeared unavoidable.

Three horses were purchased and the hyperimmunization of the five animals undertaken. One horse died during immunization. The remaining four animals were successfully treated. The burros produced serum which tested satisfactorily; that from the horses possessed a very high degree of potency, far in excess of established European standards. We were fortunate in securing potent serum from all our animals, as it is claimed that only about 20 per cent will respond to hyperimmunization by the production of potent serum. One horse was bled all that he could reasonably be expected to stand, and was kept for future work. The other animals were bled to death. The work under this project was terminated November 1, 1916.

Meantime the anthrax situation changed materially. The State Veterinary Control Service was organized and active control of acute infectious diseases undertaken. In 1915, 1916, and 1917 practically all the cattle destined to graze upon infected lands were vaccinated. The usual annual losses from anthrax have practically disappeared, and unless infected districts yet unknown to us are reported there will be no further loss of any consequence. It was our intention to test the efficacy of the serum we prepared in the work of the State Veterinary Control Service, but we have found no cases upon which to test it. A single case, diagnosed clinically by a practising veterinarian as anthrax, was recently treated with it and promptly recovered. Blood specimens from this animal were submitted for precise diagnosis; but

were negative for anthrax, so we have no satisfactory evidence that the animal treated was infected. There the matter must rest unless we encounter an outbreak in which we can test the serum. We might use this serum for simultaneous immunization, but desire to test it therapeutically when the opportunity presents.

Eichorn* of the United States Bureau of Animal Industry, working along similar lines, has produced potent antianthrax serum, and used it successfully both as an immunizing and a curative agent. Two or three commercial laboratories have recently placed similar serum upon the market at a reasonable price. Thus the obstacles encountered delayed this work in Nevada until the objects sought were achieved by others. Nevertheless, there is now available what we hoped for—a potent antianthrax serum by the use of which immediate immunity can be conferred and the lives of many infected animals saved.

In considering practicable methods for the control of anthrax in infected localities, of the various methods available two appear feasible—the double vaccination of Pasteur, and the serum-vaccine method. The latter must not be confounded with single vaccination, which consists of the injection of a single dose of attenuated virus, too weak to confer immunity. In the serum-vaccine method the injection of a dose of serum is immediately followed by one of virus stronger than could safely be given except for the protection afforded by the serum. The advantage of the serum-vaccine method lies in the immediate immunity conferred and the necessity for handling the cattle but once. Its single disadvantage is that the materials used cost more than the double vaccine. On the other hand, while the latter costs less than serum-vaccine, it requires about three weeks to confer immunity, during which time the cattle are more susceptible than if untreated, and requires two injections. Owners and control officials must weigh these considerations against each other in selecting the method to be employed in any particular case. In the State Veterinary Control Service work we have used both. The respective results appear about as above stated. Our cattle owners appear to favor the serum-vaccine and that method will undoubtedly eventually replace the double method.

We do not contemplate the preparation of antianthrax serum for distribution, as there are satisfactory sera upon the market at reasonable prices.

PROJECT 4—CHICKEN CHOLERA

The results of our fowl-cholera studies were published as Agricultural Experiment Station Bulletin No. 85, December, 1916, under the title "The Use of Bacterins in the Control of Fowl Cholera."

An outbreak of fowl cholera came to our attention in March, 1914. Subsequently, it was found in five widely separated districts in western Nevada. There were no commercially prepared immunizing agents available for the control of fowl cholera and no satisfactory method for suppressing outbreaks. The separation of the sick from the well, their isolation, the disinfection of infected premises and similar measures are laborious, expensive, always difficult, and many times impossible to apply; and even under rigid official control have proven almost uniformly inadequate and unsatisfactory. It, therefore, appeared to

*Eichorn: Vaccination Experiments Against Anthrax. Jour. Am. Vet. Med. Assn. N. S., Vol. I, No. 6 (1916), p. 669.

us that we should use the opportunity presented to study the possibilities of developing a practicable method for the suppression of outbreaks of fowl cholera by immunization.

In Bulletin 85 we present the results of our experiments upon 1,986 birds in fourteen infected flocks. The paper is summarized as follows:

The existence of fowl cholera in Nevada has been demonstrated.

The outbreaks were serious and ultimately destructive, but somewhat less acute than those described as typical.

The Nevada strains of *Bact. avisepticum* possessed a comparatively low degree of virulence for chickens in laboratory tests. No strain behaved uniformly as to the time required to kill when inoculated into chickens; some birds failed to succumb to inoculation. The virulence for chickens could not be maintained by frequent passages through either rabbits or chickens; and no strain could be depended upon to kill by oral administration.

One rabbit was successfully immunized by the subcutaneous administration of bacterin. This method failed to immunize chickens against subsequent subcutaneous or intramuscular inoculation, although no more than three injections of bacterin were tried.

The use of bacterins in infected flocks produced sufficient resistance to check promptly outbreaks of fowl cholera in fifteen out of sixteen lots of fowls in fourteen flocks, although one flock required three treatments. It failed in another flock in spite of three vaccinations.

The results of field trials with bacterins as an agent for checking and controlling outbreaks of fowl cholera indicate that it is a practicable satisfactory method.

In fourteen out of sixteen lots of fowls treated, one or two injections of bacterin satisfactorily controlled the outbreak, with little or no difference in the result. In one lot there was recurrence requiring three treatments. Complete failure resulted in but one of the sixteen lots treated.

There was no apparent difference in the results whether homologous or heterologous strains of *Bact. avisepticum* were used in the preparation of bacterins. The use of stock bacterins containing several strains appears to be satisfactory, and is the logical method where a stock is to be carried for immediate use when needed.

Finally, in the last analysis, the value of a protective method must be judged by clinical rather than by experimental results.

It is difficult to produce a degree of immunity sufficient to protect animals against experimental inoculation with the virus of any of the large group of infections of which fowl cholera is one, by methods which are applicable to field conditions. The best we can hope for is to increase resistance to a point where they can resist natural exposure, which is less severe than experimental inoculation. The method described in Bulletin 85 has, since publication, been further employed in field work by the State Veterinary Control Service, with results as favorable as those published. This work is an advance in fowl-cholera control, materially strengthening our equipment.

PROJECT 15—EQUINE ANEMIA

When our study of this disease was undertaken in 1907, it was exceedingly prevalent in certain districts in eastern Nevada. The loss was heavy and there were no recoveries. It was a serious problem,

menacing the horse industry and demanding investigation. Our studies were actively conducted for several years, during which time the clinical character of the disease was well established, the tissue changes ascertained, and much valuable information acquired. We undertook to demonstrate by experimental inoculations whether or not the disease was infectious, and conducted many such experiments. The results of these experiments were more or less conflicting; so that point has not been definitely established. Treatment has never been successful.

This work has been at a standstill for two or three years for want of material, due to the natural decline of the disease.

In April, 1916, a horse was inoculated with blood collected from what appeared to be a case of equine anemia found in western Nevada, but the inoculated animal failed to develop the disease. No further material became available during 1916. We now have two or three suspicious cases under observation and are on the lookout for suitable material for a continuation of our study. If suitable cases materialize, the work will be continued along slightly different lines. The questions in point will be kept in mind, as we have no intention of abandoning the project. Meantime, however, our time is fully occupied with more pressing problems, and the plan suggested will cost very little unless opportunity presents for resuming active work.

PROJECT 16—HEMORRHAGIC DISEASE IN CATTLE

During a period of about five years, 1909 to 1914, we examined material submitted by cattle owners and practising veterinarians from a number of cattle suspected of anthrax. Several times we diagnosed that disease; but encountered a number of cases in which the history and autopsy findings rendered such a diagnosis probable, but laboratory examinations were negative. Until 1914 these cases did not assume much volume, and, with the exception of a few cases, we regarded them as probable nonspecific disorders. The few exceptions, however, gave rise to serious consideration and when, in 1914, their material importance became evident we concluded that a thorough systematic investigation must be undertaken. Arrangements were made accordingly, and for about two and a half years this has been our major problem.

The project was outlined as an inquiry to ascertain the identity of the disease by precise methods, and an attempt to devise efficient methods for its control or suppression and eventually its eradication.

We have attempted diagnosis in many and various ways. The epidemiological history, clinical aspects, and anatomical changes; the results of bacteriological examination of various tissues and organs; the experimental inoculation of various animals in considerable numbers with cultures, blood, exudate, and various tissues; agglutination and complement-fixation tests of serum; the vaccination of cattle in herds where the disease has appeared; the treatment of clinical cases with the serum of hyperimmunized horses; and the topographical and telluric conditions of the infected districts have been considered.

As a rule this disease does not occur in epidemic form, but as occasional scattering cases. In one herd of 325 cattle there were 90 cases during four months, but this is exceptional. However, in the aggregate the loss is considerable. A large percentage of the cases occur from May to January, but there are a few during the winter and early spring. It appears to be infectious, but not contagious.

Affected animals are dejected, with staring coat, distressed facial expression, swollen eyelids, tucked-up abdomen, and stand with their backs arched. Respiration is rapid, of a shallow abdominal type. Frequently the animal grunts with each inspiration or when forced to walk. There is a moderate rise in temperature, seldom above 104°F. , but in some cases to about 105.8°F. The pulse is rapid and compressible. The skin is almost invariably deeply blood-stained before death. Blood is frequently passed with the feces.

The principal gross anatomical changes consist of hemorrhages and infarction. In typical cases the autopsy reveals extensive small hemorrhages into the subcutaneous and intermuscular connective tissues, on the serous surfaces of the abdominal cavity and viscera, the pleura, on the pericardial and endocardial surfaces, into the intestine and the lung tract. Unborn fetuses may show marked hemorrhages. In some cases there is extensive infarction of the liver. There is considerable exudation into the body cavities, with edematous infiltration about lymphatic glands, many of which are swollen and hemorrhagic. The lungs may be normal, although in some instances it shows moderate congestion. There are little or no pulmonary changes, except surface hemorrhages. There is a peculiar yellowish discoloration of the tissues; the carcass emits a characteristic odor difficult to describe.

Cultures from the blood are apt to be negative; from the liver, spleen, lungs, lymph glands, bile, urine, and exudates from fresh carcasses are frequently so. Cultures from some organs may yield mixed bacteria, while others remain sterile. In carcasses sufficiently fresh to make the probabilities of extensive post-mortem invasion, if the cultures develop growth they usually consist of mixed species of small rod-shaped bacteria. In the examination of tissue smears, those from the blood represent the most constant appearance. There are almost invariably rod-shaped bacteria with ends slightly rounded, occurring singly, in pairs and threes, staining deeply, and numerous deeply staining bodies resembling diplococci. We have never succeeded in cultivating either in artificial media.

Animals have been inoculated in considerable numbers. We have used a large number of rabbits, many guinea-pigs, several cattle, two sheep, two chickens, and a horse for this purpose. Rabbits have been used in the autopsy field for inoculation, or have been inoculated in the laboratory with both cultures and tissue suspensions.

In the results of our inoculations there are, of course, variations, but the main thing they are fairly uniform. Rabbits inoculated with cultures sometimes survive; occasionally they die and the cultures are not obtained; again, we may kill several in series and finally lose the culture. In four instances such a series yielded *Bact. bovisepiticum*. Rabbits and guinea-pigs inoculated with liver or lymph-gland emulsions usually have the cultures from their heart blood and organs remaining sterile. Inoculations with liver suspensions can be continued in series, cultures remaining sterile, and continued sometimes through many animals, the tissue carrying virus. The series may result in bacteriemia, from which cultures are obtainable, or the virus may become so attenuated that it finally fails to kill. In a microscopic examination of liver smears from rabbits thus killed, the large rod-shaped bacteria above referred to are never found. The diplococci-like bodies persist throughout long periods, but do not grow in cultures.

We have isolated five strains of *Bact. bovissepticum*—two in 1915, one in 1916, and two in 1917. Four were isolated from the liver, one of them in a collateral series from a lymph-gland; the other from the blood. Four strains were isolated by means of cultures; one by direct inoculation with tissues. However, with material from a large number of autopsies, we have failed to isolate this bacterium or any other which appeared responsible for the disease. The percentage of recoveries of *Bact. bovissepticum* is so small that it materially reduces the diagnostic significance of their isolation.

Agglutination and complement-fixation tests have not yet proven of diagnostic value.

We have prepared bacterial vaccines from the cultures of *Bact. bovissepticum* isolated here and used them upon 4,886 cattle. It is more difficult to estimate the result of vaccination than if the disease occurred in epidemic form. In many herds no very accurate records are kept. The identity of vaccinated cattle is sometimes lost. For these reasons no absolutely accurate data are obtainable. We can only contrast the loss with that in the same herds in former years, and have only general statements of owners as a basis for such contrasts. Furthermore, we must rely largely upon the experience and judgment of the cattle owners as to the cause of death, as in but a few cases were we able to autopsy the animals returned to us as having died. Thus far twenty-four vaccinated cattle have been reported to us as dead, an insignificant fraction of the loss in the same herds in former years.

In a dairy herd in which the disease has occurred each summer for several years, vaccinated for the first time, there were two cows which showed marked dejection, rise of temperature, and increased respiratory and pulse rate, after both the first and second injections. The owner thought that these cows had previously suffered an attack and had recovered without treatment. The diagnosis in these former attacks is based solely upon the owner's observations and experience. The temperatures of the herd were taken and two others showed a similar increase, while the remainder of the herd were normal. The temperatures were taken 18 hours, 24 hours, and 42 hours after injection. At 18 hours and 24 hours they were high in the four cases referred to; at 42 hours they had returned to normal.

It is possible that the four cases in question were previously infected and had thus become sufficiently sensitized that they reacted to the injections as stated. If so, these reactions may have some diagnostic significance. Further observations will be made upon this point.

An antihemorrhagic-septicemia serum has been prepared by the hyperimmunization of horses with cultures isolated in our work. Several strains of *Bact. bovissepticum* and *Bact. avissepticum*, closely related species, have been used in hyperimmunizing the horses. After appropriate tests for potency the serum has been used in the treatment of clinical cases occurring in cattle. The diagnoses were necessarily by clinical means, as no specific diagnostic test upon the living animal has become available. For that reason there may have been some errors, but we believe that in most cases the diagnosis was correct.

Twenty-two clinical cases have been treated with such serum. Seven have died and fifteen recovered, a percentage of recovery of 68.18. The number of cases thus treated is too small to render the results conclusive,

they appear significant and are sufficiently encouraging to warrant continuance until a volume is reached sufficient to warrant a conclusion. Cattle grazing upon the range, supplied with water from mountain streams or springs, are seldom affected. Those living in the wet valleys, brought there from the range, having access to the sloughs, suffer principally. Some owners find that a transfer of cattle from wet to dry pastures ends the trouble. When returned to low ground it may be renewed. Some dairymen remove their cattle from pasture and feed in dry corrals if the disease appears.

Some valleys are naturally wet; others have become so through irrigation with defective drainage. Throughout the infected areas the trouble arises in cattle feeding along sloughs or upon overflowed land. Of course, there is nothing peculiar to this disease in that respect. Lands under the conditions mentioned harbor other diseases beside the one under consideration. Wet valleys in mountainous regions are considered ideal for the occurrence of hemorrhagic septicemia.

Bacteria closely resembling those causing hemorrhagic septicemia have a wide distribution in nature, apparently leading a saprophytic existence. That these bacteria may assume pathogenesis under certain conditions is an opinion entertained by some investigators, and the adherents to that opinion are increasing in numbers. That such an organism thus exists in the swamps and sloughs of certain districts, and that the conditions favorable to it are frequently realized, is not an untenable theory; and, if true, would account for the occurrence of hemorrhagic septicemia without specific introduction from outside. That specific introduction is essential in many infectious diseases is unquestionable. That there are exceptions, however, is not impossible.

Upon the foregoing facts we base a tentative diagnosis of hemorrhagic septicemia. We realize that much of the evidence is inconclusive; that inferences might be drawn. However, there is much in the evidence to support it. The work is incomplete and must be continued until the nature of the disease is indisputably established.

From the evidence at present in hand it seems probable that drainage will ultimately solve the problem of control. Thorough drainage of the valleys is not attainable under present conditions and much of the land is unsuitable for other purposes than grazing. It appears that possible vaccination will increase resistance so that only the most susceptible individuals will be subject to attack, and that the prompt treatment of such cases with antihemorrhagic-septicemia serum will reduce the losses to a minimum.

PROJECT 17—HOG-CHOLERA SERUM PURIFICATION

This project was undertaken in an attempt to overcome the difficulties attending the preparation and use of defibrinated blood in immunization against hog cholera.

By chemical precipitation we are undertaking to separate the active portion of hog-cholera serum so as to be able to discard the blood corpuscles, fragments of fibrin, albumin, contaminating bacteria, and all inert and useless material.

That the protective properties of hog-cholera serum can be precipitated from the globulins by the use of ammonium sulphate as a precipitating agent, our experiments have clearly demonstrated. In undertaking this

work it was assumed as a working hypothesis that the protective portion of the serum would accompany the pseudoglobulin fraction, as is the case with antidiphtheritic and antitetanic sera, and that the euglobulin fraction could be discarded, in which case a very material concentration could be effected.

Our experiments, however, show that both the euglobulin and pseudoglobulin fractions are potent, so that the euglobulins cannot be discarded. It, therefore, becomes necessary to utilize the entire globulin content. This will permit less concentration than would be the case if the euglobulin fraction had proven impotent, but concentration is of less importance than the other objects sought, which apparently are being realized.

Eight lots of serum have been processed and tested upon pigs by the simultaneous use of the globulins and hog-cholera virus, controlled by the use of raw serum from the same lot and virus, with proper checks. The results of these tests have been uniformly satisfactory, the globulin apparently protecting hogs against inoculation as successfully as does raw serum. Our data are beginning to assume sufficient proportions to warrant the above conclusion. At present we are somewhat hampered by the scarcity and high price of pigs, but hope to be able to secure a sufficient number to complete the necessary experiments. We contemplate the use of hog-cholera serum globulins in actual field work in the near future.

In this work numerous technical difficulties have arisen. These appear to be nearly solved with the exception of the difficulties encountered in final filtration. The globulin solutions must finally be passed through filters of the Berkefeld type in order to effect sterilization. Considerable difficulty is encountered in the filtration. Whether we will be able to overcome this entirely, so that the method we are employing may become commercially practicable, must be answered by additional experiment. Otherwise, the method appears feasible and practicable; and, when prices of chemicals and laboratory materials return to normal, the expense of the process should not be prohibitive.

PROJECT 18—CONTAGIOUS EPITHELIOMA IN CHICKENS

An unusually good opportunity was presented for the work under this project when it was undertaken in December, 1914. Contagious epithelioma had appeared in a large flock in Reno. It was severe in character, a considerable portion of the flock was already infected, the disease was spreading rapidly, and the death loss was becoming heavy. The owner was discouraged and pessimistic over the prospects. In previous outbreaks he had lost heavily and feared that his flock would be destroyed.

Certain German investigators claimed success in the suppression of outbreaks of this disease by vaccination. The Wisconsin Agricultural Experiment Station had recently tried the German experiments upon a small scale, with apparent success. This outbreak supplied the opportunity to repeat the experiments upon a commercial scale. The disease, appearing in several other flocks, they were included.

Experiments were undertaken to determine whether such outbreaks can be suppressed by vaccinating exposed birds, and whether the vaccine exercises any curative effect upon birds already visibly infected. From December, 1914, to January, 1916, 5,340 birds were treated, of which 2,033, or 38.09 per cent, were visibly infected. Some septic trouble

showed the vaccinations in two flocks of 816 birds, which so complicated matters that in our published accounts we have excluded them from consideration. In the treatment of the remaining 4,524 birds, of which 1,761, or 38.94 per cent, were visibly infected, the undertaking was successful. The spread of the disease after vaccination was negligible. The mortality was 373 birds, 8.24 per cent of the entire number, 21.8 per cent of the visibly infected ones. While exact mortality figures are not available, contagious epithelioma is everywhere regarded as a serious disease with a high death-rate. Not infrequently the greater part of a flock will perish in an unchecked outbreak. Therefore the results of the experiments appear very favorable. This work has been published as Nevada Agricultural Experiment Station Bulletins Nos. 82 and 84.

There is considerable uncertainty regarding the identity of the conditions encountered in this work. The virus which causes contagious epithelioma cannot be grown artificially as can the ordinary bacteria, but can only be cultivated upon the skin or mucous membrane of the head of live chickens. There are undoubtedly certain bacterial infections which produce tissue changes of the mucous membrane of the head which are indistinguishable, except by chicken inoculation, from those caused by the former virus, which for convenience of designation we term "scab virus." That point our inquiries have amply demonstrated. Some investigators claim that the various affections known to poultrymen as contagious epithelioma, or chicken-pox, roup, diphtheria, sore head, swollen head, etc., are all caused originally by infection with the "scab virus" complicated by secondary bacterial infections. Some even go so far as to claim that were it possible to have pure "scab virus" infection that the secondary infection the disease would be mild; but that theory is purely speculative, as the conditions are impossible of realization. Some of those who hold the latter opinion believe that outbreaks can be controlled by treatment with vaccines prepared to combat the bacterial infection, disregarding the "scab virus." In our earlier work we assumed that the opposite was true, that if the primary infection with "scab virus" was properly combatted the outbreak could be suppressed, but our results indicated clearly that the vaccines must contain not only "scab virus" but the bacteria responsible for the secondary infections, in order to be effective as a curative agent. However, we have latterly encountered outbreaks, indistinguishable clinically from those in which "scab virus" plays an important role, where the latter could not be demonstrated.

In that type of infection where "scab virus" plays the principal role there will be extensive tissue changes with but little constitutional effect. If the appetite remains good, there is but little dejection, and affected birds grow in spite of the trouble. Death usually results from mechanical stoppage of respiration, or the birds become blind and lame. On the other hand, we sometimes find an outbreak of bacterial infection in which the tissue changes are slight, with severe dejection and a high death-rate due to intoxication. In the first type "scab virus" vaccines are effective; in the latter they accomplish nothing, but treatment with bacterins prepared from cultures isolated from the infected flocks are effective.

In one flock, referred to in our last annual report, 441 birds were treated with "scab virus" with but little benefit. Bacterins were not

tried. In another flock of 1,526 birds "scab virus" vaccine proved ineffective, but bacterin treatment yielded most gratifying results. In another flock of 177 birds, and one of 200 birds, the same results followed the use of bacterins. Still another flock of 525 birds has been treated similarly, but too recently to know the outcome. Another flock of 94 birds is under treatment. In this flock the "scab virus" infection was present. Some were given "scab virus" vaccine, some bacterin others combined treatment. The two latter are apparently yielding the more favorable results. In these later experiments we have treated 2,963 birds in addition to those above cited.

Evidence is thus accumulating that we are dealing with a group of infections rather than a single specific infectious disease.

We have undertaken some studies of the "scab virus" to determine its filterability, thermal death-point, effect of prolonged maceration in glycerin, specific serum reaction, and the possibilities of growth inside the bodies of chickens, but as those studies are incomplete we are not ready to announce the results.

PROJECT 21—ANTHRAX-SERUM PURIFICATION

This project represents an effort to refine and concentrate antianthrax serum along the same lines employed in the preceding project. It would appear that, if this can be done, antianthrax-serum globulins would be decidedly preferable to raw serum. That it can be done appears logical.

A small amount of work has been done under this project. One lot of serum was processed by fractional precipitation with ammonium sulphate, splitting the globulin content into its euglobulin and pseudoglobulin fractions. That experiment indicates that the globulin content of antianthrax serum differs in certain of its properties from hog-cholera serum. Of the various antisera to which this method of separation of the active principle may prove applicable, we may find that each requires a somewhat different treatment. It is our intention in conducting this project to utilize only the time not required by more pressing work. It may, therefore, be some time before data are accumulated.

THE STATE VETERINARY CONTROL SERVICE

The organization of the veterinary activities centered at the University is somewhat unique. The financial arrangement which supports it is complex. It is efficient and sufficiently flexible to meet whatever situation may develop with respect to infectious diseases of domestic animals. Its efficiency and flexibility warrant the arrangement and, while certain features depend upon mutual agreements with certain livestock interests rather than upon statutory provisions, the arrangement secures the cooperation of those interests in our entire program, serves all interests satisfactorily, and has advantages which more than offset any inherent defects.

Briefly stated, the plan and work of the organization are as follows:

With the single exception of the control of diseases peculiar to sheep—which is exercised by a State Board of Sheep Commissioners—all the veterinary activities of the State are centered at the University under the direction of the writer. This includes the instruction of agricultural students in veterinary subjects; the research work of the Agricultural Experiment Station; the work of the Agricultural Extension Division in animal diseases; the diagnosis of infectious diseases of domesticated

animals; the control of outbreaks of those diseases; the preparation, distribution, and use of hog-cholera serum and other sera and vaccines; and the exercise of the quarantine function, both intrastate and interstate.

This arrangement makes us responsible for the control of all outbreaks of infectious diseases except those peculiar to sheep; in the case of a disease affecting several species of animals, including sheep, responsibility rests upon us. It enables us to apply immediately any knowledge gained through experimental research to the actual control of the diseases being studied, relieving us of the embarrassment which might result from prematurely placing such information at the disposal of persons not responsible to the administrative head of the department. It places at our disposal for research purposes any and all material which may develop in the State; places every infected herd at our disposal for testing preventive and control measures, insuring to the owners of those herds the use of the most modern methods; enables us to conduct certain features of our research projects upon a commercial scale, thus rendering the data more valuable than those which can be secured from the small number of animals we are able to purchase for experimental purposes; correlates the research and extension activities, insuring uniformity of instruction and practise.

It is important that we be able to utilize the material from outbreaks of infectious diseases, not only in the conduct of projects already under way, but as sources of information as to the necessity for undertaking new ones and the preliminary studies incident to a decision as to the necessity for so doing. In the use of our herds for testing the newer immunizing agents, discretion and judgment are essential, as no reckless experimentation is permissible under any circumstances. The several veterinarians connected with our work are kept fully informed and in close touch with the progress of the research work and field practice by frequent conferences and otherwise. The uniformity of opinions and information secured by close contact and frequent interchange of views among the several men thus engaged is important. It is unfortunate when several persons engaged in closely connected work teach various and conflicting theories and practise. Such a situation tends to lower an institution in the public esteem, as it fails to inspire the confidence so essential to success.

For the first eight years of its existence this department was a one-man affair, financed almost entirely from the Adams Fund, which provides only for research. During that time considerable research work was accomplished, an acquaintance with many livestock owners established, a familiarity with the needs of the industry in the State with respect to infectious diseases gained, and the foundation laid for affording real assistance in the control or eradication of those diseases. This is the ultimate object to be attained by the department—the reason for its existence.

During the past two and a half years our work has expanded rapidly. There are now four veterinarians on our staff on full time in addition to the writer, and the services of two or three practising veterinarians are available as needed, beside an office assistant, a laboratory assistant, and a laborer. We have been given larger quarters, increased and additional equipment, more money with which to conduct our work. The funds for more liberally financing the department are derived from various sources, much of it from outside the University. With the funds thus

placed at our disposal we are able to render efficient service to the livestock industry.

Taking the original Department of Veterinary Science and Bacteriology as a nucleus, we have built around it the present service. The State Veterinary Control Service; the State Board of Stock Commissioners which the writer serves as secretary; the State Board of Sheep Commissioners; the State Rabies Commission; and certain private livestock corporations—all cooperate and contribute to the work. The arrangement gives great flexibility, enabling us to meet any situation which has ever arisen. In case of need the entire force could be utilized to meet an emergency, the statutes of the State providing for the payment of salaries from state funds in such a case.

We examine any suitable material submitted for the diagnosis of infectious diseases of animals; investigate reported outbreaks, and assume active control in such outbreaks. Thus we not only exercise the quarantine function, but, after giving an accurate diagnosis, administer vaccine or serum when needed without expense to the owner for services, the owner paying only the cost of materials used. In addition we undertake the study of the more important problems by precise scientific and experimental methods. As our work develops we feel an everdecreasing need for quarantine measures. We believe that when an owner of live stock is confronted with an outbreak of infectious disease he needs expert assistance and advice more than he needs quarantine. Of course, it is advisable to have the quarantine authority in reserve in case of need.

The volume of work this service performs has become large and is increasing. It is of direct value to the industry and is appreciated by the men engaged in it. The superiority of service secured by centering the various activities of the State under a single management over that of a multidirected service is amply demonstrated by the results we have achieved.

DEPARTMENT OF RESEARCH CHEMISTRY

PROJECT 11—RELATIVE FEEDING VALUE OF CROPS OF ALFALFA

For many years the farmers of this State have maintained that there is a marked difference in the feeding value of the separate crops obtained from the same alfalfa field. Nearly all the farmers interviewed assert that the second crop is the poorest feeding material, but find no great difference in the first and third crops.

It was considered worth while to undertake a chemical investigation of the different crops collected from various parts of the State, with a view to ascertain whether or not chemical differences existed that might explain the feeding value of these crops. Over one hundred samples of different cuttings of alfalfa have been included in the work. The data already at hand warrant us in making some far-reaching generalizations.

Without taking into account the results obtained from the crude-fiber determinations upon the various cuttings, we may say that a perfectly clear and definite relation exists between the ash and nitrogen content of the different crops of alfalfa.

Large variations were found in numerous samples of the same crop. These particular samples, showing marked differences in ash or nitrogen from others of the same crops, may have been grown under wholly different conditions not known to us, and errors in the analyses might also be responsible for some of these differences. However, when all the analyses of the first crop are summarized, it is seen that the average thus obtained for both ash and nitrogen is higher than for the second crop, but lower than for the third and fourth crops. The actual averages for ash are the following:

<i>Crop 1</i>	<i>Crop 2</i>	<i>Crop 3</i>	<i>Crop 4</i>
8.07%	7.75%	8.32%	9.37%

For nitrogen:

<i>Crop 1</i>	<i>Crop 2</i>	<i>Crop 3</i>	<i>Crop 4</i>
2.40%	2.27%	2.61%	3.18%

Furthermore, it will be seen that a practically constant ratio exists between the ash and the nitrogen for the different cuttings, namely:

<i>Crop 1</i>	<i>Crop 2</i>	<i>Crop 3</i>	<i>Crop 4</i>
3.1	3.4	3.2	3.0

From these results we might be justified in drawing the conclusion that the feeding value of the crop lies not only in the nitrogen content but in the ash content as well. On this basis the fourth crop should be the best feeding material, the third the next, then the first, and lastly the second crop. This order has virtually been established by the farmers of this State in their feeding practise.

It will be interesting to learn if the crude-fiber determinations of the different crops will show the same relation. If so, we might expect to find the highest percentage of crude fiber in the second crop, the next highest in the first, then the the third, and least in the fourth crop. Whether this hypothesis can be verified by experiment remains to be seen.

Enough has already been done upon this project to offer a reasonably sure method of analysis for any given alfalfa crop in this State. In other words, if it is desired to find out whether or not a given load or stack of hay is first, second, or third crop, the determination is a simple one. Furthermore, if the results obtained are criteria of the feeding value of the hay, which now seems probable, it would be just as easy to determine chemically the feeding value of any alfalfa hay, irrespective of the crop in terms of these general averages. Work on this project will be continued.

PROJECT 13—CHEMISTRY OF NITROGEN FIXATION BY ALFALFA

This project comprises a chemical study of alfalfa with a view to learn and control the intricate mechanism by which the plant abstracts and utilizes the nitrogen in the atmosphere. A great deal of work has already been done upon this project, various constituents isolated, and characterized. This project is considered practical only in a remote sense, and for that reason a very limited amount of time has been allotted to it during the past year. The chemistry of alfalfa saponine—a constituent of alfalfa—has been completed, but the work is not yet published. This saponine is similar in many respects to the saponines of other plants, but different in others.

For example, alfalfa saponine, like most other saponines, is soluble in water, giving a strong foam on the water when shaken with it, which lasts for some time. Like solanine, it is a nitrogenous saponine showing a slight alkalinity with sodium alizarin sulphonate, but neutral to litmus and phenol phthalein.

Alfalfa saponine gives the various color reactions of other saponine and is hydrolized to glucose and a sapogenine by acids, but with respect to its hemolizing property it differs from other saponines, and this one property renders other saponines unfit for use in soda fountains as foam producers on soft drinks. Alfalfa saponine does not hemolize blood and is therefore, not poisonous like other saponines.

In cooperation with the Veterinary Department of this Station, I have investigated this property of alfalfa saponine very carefully.

This saponine might find use in soda fountains and elsewhere as a foam producer, since it has been found to be harmless when administered to animals. Alfalfa saponine also differs from other saponines in that its ash is composed of calcium and magnesium almost exclusively, while the ash of other saponines is composed largely of sodium and potassium. Other chemical and physical properties of alfalfa saponine have been determined and the work is now ready for publication.

A saponine X obtained in the purification of crude alfalfa saponin has a yellow color, an ash content of 25-30%, and possesses laxative properties. This substance has not been studied further.

PROJECT 14—PLANT POISONS

This project has received major attention during the past year, the work having been divided between death camas, lupines, golden rod and rabbit brush—four classes of poisonous plants that have occasioned more or less loss among sheep in this State.

Death Camas—Every spring sheepmen report some losses in their herds due to death camas. This plant, whose botanical name is *Zygadenus intermedius* Rydg., was collected at different periods of growth and

tested with respect to its poisonous qualities. The determinations led to the following positive conclusions: The plant is poisonous at all stages of growth. The leaves prior to blooming are poisonous, and this fact should be given careful consideration by sheepmen, for death camas appears among the very first plants on the range in the spring.

Sheep avoid eating this plant unless forced to do so by lack of other forage or upon forced drives. At the blooming period all parts of the death camas are poisonous. The flower cluster was found to be the most poisonous per unit weight of material, the tubers next, and then the leaves. The stems were the least poisonous. After the plant had reached the seeding stage, the seeds were the most poisonous. The tubers appear to be poisonous at all times; but, since they are generally four to six inches below the surface of the ground, they play no direct part in the poisoning of range animals. Whether or not the woody stems of the mature seeded plant are poisonous was not considered worth while to determine, for they are so fibrous and tough that they are not likely to be eaten under any circumstances.

A considerable quantity of material was collected last spring, but on account of the heavy frosts late in the season it was considered unsatisfactory for our purposes in producing normal results. The alkaloidal extract obtained from this lot yielded a much smaller quantity of reasonably pure alkaloid and the physiological properties of the same were less pronounced and unlike those from fresh and unaffected death camas.

Twelve different physiological tests were made upon rabbits, using this material, but the results were such as to lead us to postpone the death camas work to another season when material unaffected by frosts and drought might be secured.

Lupines (Lupinus sp.)—In this State the spring and summer of 1916 was unusually dry with several late frosts, which rendered the forage and plant life in general upon the range poor and scanty. How the death camas was affected has already been discussed. The lupines were affected in a somewhat different way. The yield of pods and seeds for a given area was perhaps not more than one-half or one-third of the normal. This was not the only difference, for, when the man who had been sent to collect lupine pods for our work brought them in, we found that fully nine-tenths of the pods were wormy and a large number of the seeds had been completely devoured. The man was sent out on a scouting expedition to try to locate other areas of the blue lupine where the seed pods might be unaffected, but without success.

Physiological tests were made of extracts from the blue lupine leaves and flowers prior to the seeding stage, and they were found to be non-toxic to rabbits.

Extractions were then made of the affected seeds and pods to isolate the lupanine hydrochloride which we had obtained in crystalline form in small quantity the year before. To our surprise only a very small quantity was obtained after working up the entire lot of lupine pods gathered. It was not enough to accomplish anything chemically. The residues and extracts were worked over again and the products tested out on rabbits by Dr. Records, but without a sign of poisonous qualities. Four such physiological tests were made on the different products obtained and, since all were negative, the products were all thrown away and the work on lupines postponed until a time when healthy material could be secured.

Golden Rod (Solidago spectabilis, Gray.)—Having had little success with both death camas and lupines this year, we still had a third variety of poisonous plants to consider, namely, a species of golden rod, which has been found to cause the death of a number of sheep the season before.

Sufficient golden-rod material for study had been collected in October the month when the poisoning occurred. This material was worked over with a view to the isolation of an alkaloid that might have been the cause of the poisoning. Extractions were made with ether, chloroform, and alcoholic-hydrochloric acid, and each worked up separately for the separation of alkaloids from the residues. In each case a reddish brown resinous material was obtained, which was tested toxicologically by Dr. Records of the Veterinary Department.

Four such lots of supposedly alkaloidal residues were obtained and tested out on rabbits, but with uniformly negative results. This seemed to us conclusive proof that no alkaloid was present in the golden rod in sufficient quantity to produce the observed toxic effect on sheep, unless sheep are poisoned by a substance to which rabbits are immune.

In the course of the preparation of one of these products from *solidago* using 95 per cent alcohol as solvent, a brownish extract was obtained. When concentrated and poured into dilute tartaric acid to combine an alkaloid that might have been present, a white crystalline substance was obtained by concentrating the tartaric-acid solution after the tar had been separated. It was thought that this crystalline product, having no resemblance to tartaric acid itself, might be an alkaloidal tartrate with poisonous properties. Dr. Records gave 0.5 g. of this to a rabbit in gelatine capsule by mouth and in about a week the rabbit died. A sheep to which we gave 1,000 g. of leaves remained normal for almost forty-eight hours before exhibiting signs of poisoning, showing that the substance is a slow-acting poison. From this the conclusion was drawn that we had found the poisonous principle.

The next few weeks were spent in isolating a sufficient quantity of the material for work. To make sure that this substance was really the poison, we again tried it on a rabbit, but, greatly to our surprise, the animal exhibited no abnormal symptoms. A second trial gave the same negative results, when it became evident that the poisonous principle in golden rod was still to be discovered.

The idea then occurred to us that the poison might not necessarily be organic in character, but rather a superabundance of some inorganic element which could be recovered and quantitatively determined in the ash resulting from the incineration of the plant. This idea was followed out and to date we have accumulated enough evidence to warrant the statement that the poisonous principle in golden-rod leaves is potash or iron or both. This question we hope to settle in a few weeks and then publish in bulletin form the complete data obtained.

Poison Alkali Brush (Tetradymia glabrata, Gray.)—A new poisonous plant was discovered this year. The discovery cost a local sheepman more than 1,100 sheep, and the cause of the poisoning remained in doubt for some time until the idea occurred to us that it might be due to potash obtained by eating the tips of this brush.

Careful analyses were made for potash upon the liver, blood, ascitic and pleuritic fluids of the poisoned sheep, and all were found to be abnormally high in this element. The tips of the poison alkali brush

were analyzed for potash, and found to run 25.9 per cent soluble potash in the ash, equivalent to 2 per cent chloride of potassium in the green twigs.

A healthy sheep was fed 1,900 grams of crushed and macerated tips with fatal results, and the analysis of corresponding parts of this sheep showed comparable, if not identical, values of potash. Although other causes of the poisoning might not be wholly excluded, our work evidences a strong probability that potash in the poison alkali brush tips was the cause of the poisoning.

General Remarks—This department was fortunate in having provided a good supply of chemicals and apparatus prior to the war, and consequently very few items have had to be supplied at the present high prices. Enough of the more expensive chemicals is now on hand to last another year.

Mr. George H. Hopkins, a student, has assisted me to the extent of about fifteen hours per week during the college year upon Project 11. Mr. A. C. Wilber has been student assistant in the department during the year, spending about the same amount of time upon general laboratory routine. As in the years past, about one-sixth of my own time has been devoted to teaching.

DEPARTMENT OF METEOROLOGY

PROJECT 12—SNOW STUDIES AND SNOW SURVEYING

The entire year has been spent in completing and analyzing data obtained during the past several years in studies relating to the conservation of snow and the forecasting of seasonal run-off. Special appropriations generously made by the Director for student assistance will make possible the early completion of two bulletins—(1) The Evaporation of Snow; and (2) Snow Surveying: Its Problems and their Present Phases—which should be credited to this year. However, the completion of the remaining bulletins will depend upon the obtaining of further appropriations or occasional opportunities to continue the analyses of the data.

The data being analyzed fall into three main divisions:

- (1) The Evaporation of Snow;
 - (2) Snow Surveying and Forecasting of Stream Flow; and
 - (3) The Relation of Mountains and Forests to the Conservation of Snow
- To these should be added:
- (4) The Avoidance and Prevention of Frost—which has been maintained from state funds.

(1) Evaporation of Snow:

The study of the evaporation of snow, being fundamental and preliminary to the other snow studies mentioned, has received special emphasis. Furthermore, because of the exceptional dryness of the atmosphere in regions where irrigation is necessary and the slight attention so far given to the evaporation of snow, endeavor has been made to establish a normal for the semiarid West and to perfect the technique.

The comparative rate of evaporation under various conditions of forestation and elevation has been determined; likewise of ice, snow and water under similar conditions. Evaporation in tree crowns has been briefly compared with evaporation from the snow on the ground.

The effect of hoods on pans in apparently accelerating evaporation has been studied at length, as has the effect of allowing the contents of the pans to melt.

This work should be continued sufficiently long to determine more exactly the relationship between the evaporation in the higher and lower levels of mountain watersheds and the approximate normal for the mountain system. No attempt has been made to determine the exact relationship of the various elements of wind, temperature, and humidity to evaporation, though a few obvious comparisons have been made. The atmospheric elements, as found in the field, are so complex that laboratory control must be had to isolate each element and determine its effect.

(2) Snow Surveying and the Forecasting of Stream Flow:

As pointed out a year ago, the study of snow surveying has inevitably fallen into the two main divisions indicated by the joint title given.

a. Snow Surveying—The first division, "Snow Surveying," has now been brought to a logical conclusion, and the accuracy of the method has now been established. A snow sampler of sufficient length and lightness has been developed to measure all snows ordinarily found. Further-

Now, a special cutter has been perfected, so that snows of all densities and ice crusts can be readily penetrated without loss in the core. Finally, the use of sections makes the sampler convenient to handle, however shallow or deep the snow may be.

The search for the ideal location for courses along which to survey has been continued. The heavy winds of last winter have demonstrated the need of choosing wherever possible open flats protected from erosion by the presence of encircling slopes and forests, yet sufficiently removed from overhanging cliffs to prevent overloading by snow blown from their crests. Courses on exposed slopes have been found erratic and are a possible maximum error of 20 per cent unless the average of several slopes is taken.

Forecasting of Stream Flow—The season of 1915-1916 has made it obvious that the snow cover on the mountains does not necessarily indicate the stream flow to be expected, for certain types of weather exercise preponderating influence on the amount of water that finds its way from the snow-fields to the channels of the streams below. For example, the snow-fields represented 144 per cent of normal, yet the rise of Lake Tahoe—in whose basin the survey was made—was only 103 per cent of normal.

The cause was traced to lack of precipitation during the spring on the lake's surface, to excessive evaporation, and finally to the probable lack of run-off caused by prolonged freezing after run-off had begun and to the absorption of additional moisture in repriming the soil.

The present season of 1916-1917 will evidently afford a striking illustration of the effect of retarded, but not interrupted, run-off on stream flow.

To determine the exact relationship of the weather to the run-off, a series of late spring and early summer snow surveys was inaugurated last year at typical stations and a comparison begun of the disappearance of the snow and the rise of the lake. This series is being continued the present season. Since the Tahoe basin is largely a water basin and is, therefore, unduly subjected to water evaporation, similar surveys should be conducted in the adjacent Carson basin, whose surface is land.

To pursue this problem in retrospect, a table is being made showing the percentage relationship of the annual and monthly stream flow of the Walker, Carson, Yuba, American, and Mokelumne Rivers which head in the Sierra Nevada near Lake Tahoe. However, shorter periods even in months will be necessary to show in detail the effects of weather on the acceleration and retardation of stream flow. Because of the lack of exact measurements of mountain snowfall prior to the inauguration of snow surveying, this retrospect is limited to recent years.

The practical value of snow surveying to agriculture obviously lies in the information regarding the minimum amount of water available for the season. In the case of lakes and reservoirs whose inlets are much higher than their outlets, it will be possible to revise the forecast some days or even weeks in advance, so that the highest level can be maintained without risk of overflow. In the case of streams whose flow must be realized as it comes, the forecast must necessarily be more general in character; yet some revision can be made between the time of the spring snow survey and the planting of crops. At least, the agriculturalist can be freed from the alarm of lack of water, because the run-off is late in starting.

(3) *The Relation of Mountains and Forests to the Conservation of Snow*

Although many tables have been projected and partly completed attention has been given primarily to checking and arranging the data to show the evolution of the snow during the periods of accumulation and melting at various elevations and under various conditions of forestation. In a plan of such scope many gaps must necessarily occur. Further more, the larger problems of seepage and transpiration, which have been studied by others, have not been entered upon. Emphasis has been placed rather upon the study of the efficiency of forests of various types in conserving the snow cover against early melting where there is no reservoir below to impound flood waters. Only when the snowbanks have become greatly isolated and the underlying soil dry, is there probably any considerable loss in the snow. At least the losses due to continued evaporation and transpiration seem to be amply compensated by the retardation in melting.

The conserving power of the fir tree, whose foliage is particularly dense was amply illustrated during a recent trip to Ward Creek to observe the melting of the snow under conditions of unusually high temperature. While the deforested slopes had already become dry on the surface and the meadow lands were a quagmire, the snow-fields where protected from the sun and heat by the continuous fir were still firm to tread upon even in the middle of the afternoon.

When the bulletins on evaporation and snow surveying have been completed, such time as is available will be given to the further analysis and publication of the accumulated data.

(4) *Temperature Survey and Frost Studies:*

The temperature survey has been continued at the stations reselected in 1915. These include most of those established originally in the Truckee basin and additional ones in the lower Truckee and Carson basins established in 1915, in cooperation with F. B. Headley, Superintendent of the Truckee-Carson Experiment Farm (Bureau of Plant Industry).

The effect of low temperature upon blossoms and setting fruit was studied again during the occasional frosts that prevailed this season. On the night of May 15 occurred the most severe frost of the season. The plums, peaches, and pears were in full bloom, and in the case of the green gages the petals had fallen. The apples were mostly in large buds or full bloom. Approximately one-fourth of the buds were medium. Where orchard heating was not employed, the temperature fell to 24°-26°. Yet approximately half of the crop of apples and plums survived. The pears were uniformly destroyed.

The few who heated their orchards even with makeshift appliances had no trouble in saving their entire crop. The writer practised the utmost economy of fuel in his orchard to see how little expense would be necessary to save the crop. The plums were not protected at all until the temperature of 30°F. was reached, and then only with a single heater to each tree. The peach tree was heated at 28.6°; the pears and crab-apples at 27.6°; and the apples at 26.6°. Owing to the fact that the trees bearing similar kinds of fruit were scattered, the efficiency of the heating was necessarily lower than when heaters were used in groups. At one time the temperature in the orchard was allowed to fall to 26.4° but was soon raised to 28°, which was not exceeded during the remainder of the night. The minimum temperature outside of the orchard

to 24°F. The heating was begun at 12:45 a. m. and ended at 5:25 a. m. Not over fifty gallons of distillate No. 18 were used, the cost being \$2.75.

The fruit, including currants, was all saved, except the green-gage pears, which were too remote from the heaters to gain the full benefit of the heat, and the pears, which were evidently heated too late. Yet the pears and the pears will be half a crop. It is interesting to note that the pears on the lowest and highest branches of the trees were injured, the former suffering during the early stages of the frost and the latter during the later. The blossoms in the middle branches of the trees, which were easily reached and protected by the heaters, were wholly protected.

From this experience, which repeats earlier ones, it seems that, under conditions of humidity prevailing in this section, fruit probably with-stands injury here more readily than elsewhere. This fact should be verified by experiments under laboratory conditions.

A survey of the fruit on the trees made later in the season proved yet how slight is the effort usually necessary to save the crops. Over most of the Truckee-Carson Project there was a fair crop of fruit, the exception being its lowest district, The Island, where practically nothing survived. On the higher slopes near Hazen even apricots were well. East of Reno, at the Nevada Hospital for Mental Diseases, the fruit on the higher ground were well loaded. West of Reno, where the elevation is high, only the early blossoming apples were injured. In Carson City, which is somewhat more exposed to frost than the districts to the north, the trees bore one-half to two-thirds of a crop.

The most striking incident of the season was the survival of the cherry cherries at Dr. A. E. Hershiser's residence in Reno, though the fruit in the yard was killed. If these cherries are immune to the effects of frost that occurred there this season, they should be a profitable crop to grow in this portion of the State.

It seems at least a pity, when food of every kind is being conserved to meet the exigencies of the war, that no endeavor whatever was made by the owners of orchards to save their fruit. Those who made the attempt were rewarded by a full crop of fruit for less than five hours work. In exposed situations, alfalfa, peaches, and raspberries were winter-killed, in some instances evidently during the long period of cold that prevailed in January. At Fallon the tamarisk, a hardy windbreak, was killed to the ground. In the situations less exposed, probably owing to the protection from the wind, no damage was noted. This was particularly true of the raspberries in the writer's orchard. Probably a windbreak would have afforded complete protection.

The data being gathered on temperature and frost occurrences during the past several years should now be analyzed and published. To do so will require an appropriation of approximately \$300 for student assistance in analyzing the data for final analysis. The cost of publications will be extra.

Cooperation—Cooperation has been continued during the year with the Truckee-Carson Experiment Farm at Fallon, which is maintaining the temperature survey on the Truckee-Carson Project. Cooperation has also been maintained with the Reclamation Service in snow surveying at Lake Tahoe. The Weather Bureau, however, abandoned its cooperation in the snow surveying in the Carson and Walker basins and in the evaporation

of snow for the method of accumulative snowfall (without reference to density).

On the other hand, the Meteorological Service of Canada has formally adopted the method of snow sampling for its mountain stations, and the United States Forest Service is planning to inaugurate snow surveys in the San Joaquin and Kings basins. Inquiries have also come from the Engineering Department of the State of California and from the University of Lausanne, Switzerland. Finally, at the request of Dr. deQuervain, who is using a Mount Rose snow sampler in the study of the growth of glaciers, an ice cutter has been perfected which will cut through crusts of ice one and one-half inches thick without compressing the core. This addition finally perfects the Mount Rose sampler so that it is equally usable and efficient in snows of all types and to the maximum depths usually found.

Publications—Bulletin 83, Technical, by Professor Fergusson, on "The Value of High-Level Meteorological Data in Forecasting Changes of Temperature," was honored during the year by being reprinted at length in Scientific American Supplement No. 2152, March 31, and No. 2153, April 7. This bulletin has also been requested by some forest service stations for its mountain climatological data.

The paper read in January, 1916, before the Second Pan-American Scientific Congress on "Snow Surveying: Its Problems and Their Present Phases," is being published in full with some tabular appendices in the proceedings of the Congress. The manuscript has also been widely circulated for the purpose of receiving and giving suggestions.

Finally, a bulletin on the evaporation of snow and another embodying a revision and further extension of the manuscript on snow surveying will shortly be ready for publication.

Future of the Work—Irrespective of the future of the department, the future of the work seems assured. The increasing interest in the methods inaugurated by the department shown by the United States Reclamation Service, the United States Forest Service, and the Meteorological Service of Canada, and plans already formed, indicate the inauguration of snow surveys on a large scale throughout the Pacific Coast and western Canada.

The department will be continued privately for a time until the present projects are completed, in case additional assistance now under consideration by the University cannot be granted. The Reclamation Service also is considering the plan of financing the work in the Tahoe basin as a Tahoe snow laboratory and conducting it jointly with the department.

DEPARTMENT OF ENTOMOLOGY

PROJECT 19—BITING FLIES OF CATTLE

On June 1, 1916, the Department of Entomology secured the approval of the Office of Experiment Stations, Washington, D. C., for a joint project to be undertaken by the Bureau of Entomology and the Nevada Experiment Station in the study of certain biting flies of cattle. These flies afflict the cattle on mountain pastures to such an extent that they do not put on flesh, even in midsummer on excellent grass. The cattle bunch together and stop feeding when the flies are at their worst, and they are kept on the move, restless and annoyed when feeding. Naturally enough, they do not make the gains to be expected from the character of pasturage.

These flies, nearly all of which belong to the family *Tabanidæ*, are notorious for the injury and annoyance they cause in this and other ways. They are large, blood-sucking flies whose maggots are supposed to live in mud and stagnant water, or even in running streams. Since the habits of the local blood-sucking horse- and cattle-flies are not well known, and nothing is known about their breeding places and their earlier stages of growth, it appears that a careful study of their habits and breeding places may make it possible to use artificial measures for the reduction of their excessive numbers. On the other hand, control may prove to be impracticable. This project will naturally include two principal lines of work:

I. The study of the life-histories and habits of the principal species of biting flies involved, with special reference to the following points:

- (1) Egg-laying habits of the flies; length of egg-laying season and duration of the egg state.
- (2) Habits and structure of the newly hatched larva and, in general, of the earlier larval stages.
- (3) Duration of the later stages of growth, habits of the maggots, and conditions which are necessary for growth to maturity.

II. A study of methods by which these flies may be trapped or may otherwise be kept from doing injury; with studies of methods of destroying the earlier stages of the flies, their eggs or larva, by draining low-lying pools and swamp lands, or by using oil or lime in such waters, or by any other means indicated by the habits and life-histories of these insects.

This matter of injury due to biting flies of cattle is one which touches agriculture in two principal ways: (a) The flies appear to be active agents in the spread of anthrax in the regions where the studies are to be undertaken. It seems that they may likewise be carriers of hemorrhagic septicemia in cattle and perhaps of swamp fever in horses. (b) Aside from annoyances to horses during the harvesting, these insects cause the cattle to stop feeding early in the day and to bunch up and fight flies until well along in the afternoon. This results in very slow gains or even in loss of flesh when the flies are most active. On the whole, the total injury to beef animals on pasture during the height of the fly season,

aside from losses due to the spreading of disease, appears to be considerable enough to warrant the use of active measures to suppress the flies.

On August 22, 1916, field work upon this project was begun by the Nevada Experiment Station and the Bureau of Entomology, United States Department of Agriculture. The problem was assigned to F. C. Bishopp of the Bureau of Entomology, who placed the local work in the hands of Mr. J. L. Webb. In August, 1916, Messrs. Bishopp and Webb visited several localities in Nevada and adjacent portions of California with a view of finding the most suitable location for the work.

After visiting places in the vicinity of Deeth, Nevada, and others on the northwestern border of Lake Tahoe the representatives of the Bureau of Entomology examined other regions in the vicinity of Washoe Lake Nevada, and the upper Carson Valley, finally visiting Antelope Valley which lies on both sides of the Nevada-California line. The abundance of the material for study, with the fact that a field laboratory could readily be set up near a store and a postoffice in the very midst of the fly-infested region, led Messrs. Bishopp and Webb to choose Antelope Valley as the location for the field station where active work upon this project will be continued. A basis for cooperation between the Nevada Experiment Station and the United States Department of Agriculture was decided upon.

Field headquarters were established in Antelope Valley with the understanding, however, that the biting-fly conditions are to be studied in other parts of Nevada and California as may be necessary. It was at first planned to establish cooperative relations with the Antelope Valley Land and Livestock Company, but on the whole it seemed more desirable that the work should stand on its own feet and that all supplies and labor obtained from farmers and livestock men should be paid for from the funds of this project. This leaves the Station free to choose other localities for the work and to move field equipment from place to place as the need may be felt without being hindered by local obligations. We are, however, much indebted to the stockmen of Antelope Valley for kind and courteous treatment and continued intelligent interest in the work.

In April, 1917, Mr. Webb was given authority by the Nevada Station to proceed with the purchase of materials and supplies for an insectary. It was planned that the entire cost of the building should not exceed \$250. During the winter an admirably complete plan was outlined by Messrs. Bishopp and Webb and Dr. W. D. Hunter of the Bureau of Entomology embodying all suggestions made by the Director of the Nevada Station. Throughout the late spring and early summer of the present fiscal year active work has been in progress in the field laboratory at Antelope Valley, where Mr. J. L. Webb has made excellent progress in the study of the life-histories and habits of the insects concerned. Mr. Webb has been assisted by Mr. Rufus Ogilvie, a student in the University of Nevada.

There is every prospect that it will be necessary to continue these studies patiently for a number of years in Antelope Valley and in other portions of Nevada or California before it will be possible to base recommendations for the control of the insects upon sound observation and experiment.

Alfalfa Insects

Very few complaints of injury due to alfalfa insects reached the University in the present fiscal year. Cutworms did comparatively little

damage, and on the whole the State's alfalfa crop was injured far less than usual by insects which infest the fields. This was particularly fortunate because of the scarcity of alfalfa hay and the resulting high price. Studies of insect injuries to alfalfa will be continued from year to year as the situation in the State varies.

Insect Injuries to Home Gardens

There has never been a year in the history of the University when so many calls have been made on the Department of Entomology for special assistance and advice as in the year 1917. This was due to the fact that throughout the State patches of garden stuff were planted by amateur gardeners who had little or no experience with the control of insect pests. Worms were abundant. Cabbage-lice and cabbage-worms were found everywhere. Tomatoes were injured by the tomato horn-worm, radishes, turnips, beans, and sweet corn were injured by the sweet-potato maggot and other related insects. As the entomologist of the Station is also the Director, it was particularly difficult to give sufficient time and attention to the garden-insect troubles and to care for them properly.

In this emergency Dr. P. A. Lehenbauer of the Department of Biology at the University of Nevada showed an excellent spirit of cooperation and entered his services to the Department of Entomology in the Station. For the period when these garden pests were most active Dr. Lehenbauer worked unselfishly and unceasingly to check their ravages. The work can be done best only by personal visit, especially with amateur gardeners. Dr. Lehenbauer demonstrated methods of preparing baits for cutworms and with Mr. C. G. Vinson of the Agricultural Extension Service demonstrated practical methods of spraying for plant-lice and cabbage-worms. Dr. Lehenbauer's resignation, to take an equivalent position with the University of Illinois, was a distinct loss to the University of Nevada; and when Mr. Vinson was called to the colors on October 15, 1917, his loss was felt alike by the Experiment Station and by the Agricultural Extension Service, of which he was a valued member.

DEPARTMENT OF RANGE MANAGEMENT

The Department of Range Management is the youngest department of the Nevada Agricultural Experiment Station, having been organized during the latter part of February, 1916.

The first work was necessarily that of organizing the department—both office and field—and the development of working plans. After the office and field equipment was purchased and installed, a number of trips on horseback and by wagon were made for the purpose of determining what are really the big problems, so that all of the investigations will have a direct practical application to Nevada's livestock industry.

It was observed that from one end of the State to the other the public grazing lands have been badly abused and the carrying capacity materially reduced, due to (1) overstocking; (2) repeated grazing causing injury by excessive hoofing; and (3) grazing at the wrong time of the year.

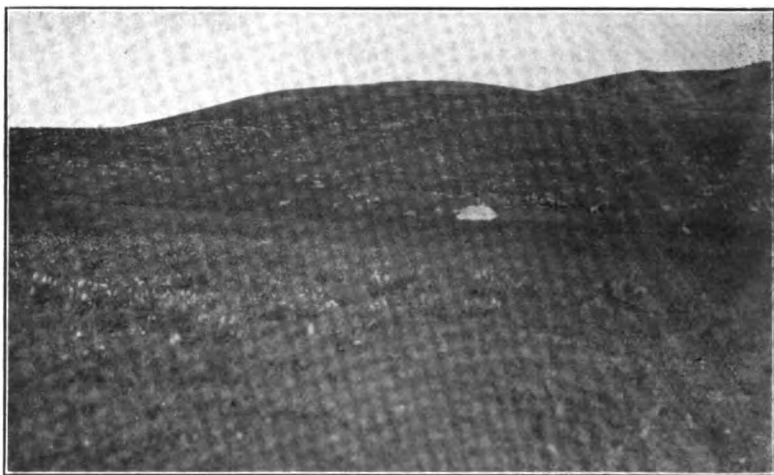


Figure 6—Sheep grazing on fall range just before going down onto the desert

Under our present laws any person may graze any amount of stock at any time on any part he pleases of the public domain. This has resulted in overstraining or overstocking the grazing capacity of the range land. The net result has been a pronounced decrease in the number of stock produced on the public lands. The present depleted condition of the public grazing grounds is due to the lack of an intelligent orderly system of handling stock on these lands. The principal reason why a proper grazing system has never been evolved for the public lands is the peculiar legal status of the occupancy and use of these lands.

The Federal Government, although the owner of the public grazing lands, has taken no steps to bring about an improvement in their condition. The present high cost of meat and the prospective increase in

that cost makes it a public duty for the Government to enter this neglected economic field. What is needed is legalized control of the public domain, be it either federal or state.

The necessary form of range control through federal legislation should provide authority for constructing fences, water-holes, weaning pastures, etc., necessary to handle properly, protect, and control the stock on the range; and, further, it should provide assurance that the stockmen, who construct the permanent improvements necessary to handle and control their stock, will have use of the range for a period of years long enough to make the advantages of control more than offset the cost of construction and maintenance in money returns to the individual, or that the use of the range will not be terminated without ample provision for reimbursing the individual for money expended in constructing the range improvements.

By such a system of range control, it will be possible to adopt a plan of utilization which will provide the necessary forage for running a definite number of stock each year, and at the same time maintain the minimum carrying capacity by allowing the important range forage plants to grow to full maturity as frequently as consistent with utilization.

It will abolish that form of range management or range practise which has been followed over all of the open public lands and which has been relatively destructive, so that today many of the finest summer and winter ranges have been absolutely denuded of all or most of the palatable forage. Further, by a regulated system of range management the loss from starvation will be reduced to a minimum, a better grade of animals will be handled, the calf crop will be increased, the cost of handling will be reduced, the ranges will receive necessary improvements in order to utilize the range forage most efficiently; and, lastly, it will insure the establishment of new home units in the form of stock ranches.

The following are the six approved investigative projects assigned to the Department of Range Management:

- Project 6—Poisonous Range Plants;
- Project 7—Reestablishment of Native Range Forage Plants;
- Project 8—Relative Importance of Native Range Forage Plants;
- Project 9—Introduction of Foreign Range Forage Plants;
- Project 10—Carrying Capacity of the Range;
- Project 20—White Sage Studies.

PROJECT 6—POISONOUS RANGE PLANTS

The investigation of poisonous plants naturally involves many lines of study, but those which mainly concern this department are (1) the species which are poisonous to stock; (2) the stages of growth in which a species is poisonous; (3) the class of stock to which each species is poisonous; (4) the habitat and distribution of each species; (5) the life cycle of each species; (6) methods of range eradication; (7) the conditions under which range losses occur; (8) the best methods of handling to reduce the loss to a minimum.

All observations to date clearly indicate that a large percentage of the stock losses in the State due to poisonous plants may be reduced if intelligent methods of handling are used. With the present high prices of stock every cowman and sheepman should know all of the poisonous plants on the range. Without this knowledge he cannot possibly handle

his stock to avoid loss from poisoning. If he knows the poisonous plants, he will then know when and where to direct his stock to avoid losses.

The most disastrous cases of poisoning occur during the long drives, when the animals are being moved from one range to another, or after unloading when the animals have been in the cars for a considerable length of time and are ravenously hungry.

It has been noted that when sheep are being hurriedly trailed they eat many plants which under normal conditions are unpalatable. The chance to exercise any choice is removed, so that they eat poisonous plants, which ordinarily would be left untouched, in sufficient quantities to cause loss. Sheep exercise the greatest possible choice in their grazing when allowed to graze openly and quietly. So long as the stomach of any ruminant is empty, it is restless and anxious to move. Therefore, in the morning, when the animals commence to graze, they

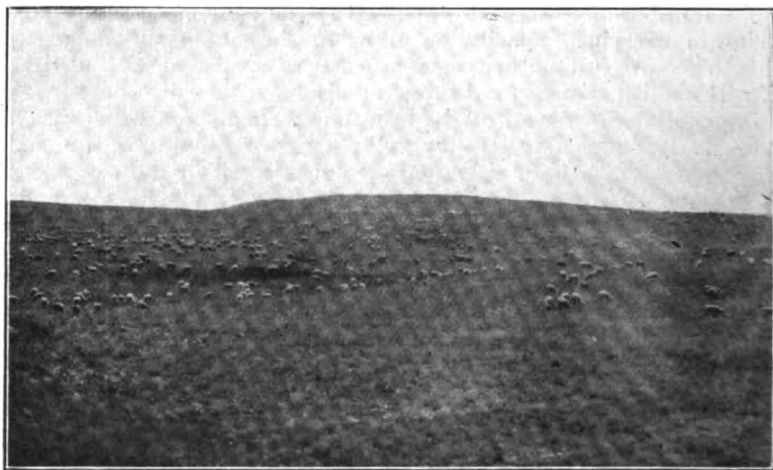


Figure 7—Heavy winter losses were prevented on this winter range last year by the use of concentrate in the form of cotton-seed cake

eat many plants which are apparently palatable, but which in the afternoon and evening they seldom touch. So the palatability of plants not only varies with different animals and different ranges and grazing types, but also at various periods of the day and the grazing season. Thus it is apparent that, in order to reduce losses to a minimum, stock, especially sheep, should have as much freedom as possible.

There is greater chance for poisoning in large flocks of 2,000 to 2,500 than when the band limit is maintained at from 1,200 to 1,500 head. This is due to the fact that it takes the larger bands longer to spread out and it is much harder to allow them to graze openly and quietly. Consequently they have to be in a much more compact flock. This forces the sheep on the inside of the flock and the trailers to eat many obnoxious plants, or plants which under normal conditions would be unpalatable. Thus losses from poisonous plants are often caused by herding in too large bands.

Many sheep are poisoned on the range simply because of the laziness, carelessness, and irresponsible conduct of the herders. There is a vast difference in the way various herders handle their flocks. The lazy irresponsible herder resorts to the unreasonable use of his dogs, herding from the tail end and keeping the flock most of the time in a compact mass. The efficient herder seldom uses his dogs, but allows the animals to graze at all times just as openly and quietly as possible; and, instead of herding from the rear, he is continually turning the leaders so that the rear of the flock is as open as the lead.

All observations tend to show that, in order to reduce loss from poisonous plants to a minimum, the following rules should be adhered to as closely as possible:

1. Keep the band limit low; 1,200 head in a flock is the ideal number.
2. Allow the animals to graze as quietly and openly as possible.
3. Never turn stock upon a strange range without first making certain that it is free from poisonous plants.
4. After shipping, it is always best if possible to fill the animals with hay, for this will ordinarily prevent loss from bloat or poisonous plants.
5. Never trail over an area infested with poisonous plants unless the stomachs of the animals are full.
6. Salt regularly and abundantly.
7. Allow the animals to go as leisurely as possible over areas where poisonous plants exist.
8. If possible, try to herd the stock away from all areas infested with poisonous plants.

Methods of handling so as to avoid range losses are being developed for each of Nevada's poisonous plants, but as yet these data are far from being complete and definite.

PROJECT 7—REESTABLISHMENT OF NATIVE RANGE FORAGE PLANTS

All of the extensive range investigations tend to show that the only plants which will grow on the semiarid range of the West are the natives, or the plants which through years of extreme competition have thoroughly adapted themselves to meet the desert-like conditions. The introduction of new plants has resulted in failure so far wherever tried. There may be a few plants in the world that will grow on the western ranges other than the natives, but they have not yet been found. To try to reseed artificially would be very difficult on account of (1) the vastness of the area; (2) seed of native forage plants cannot be had in sufficient quantity at any price, much less at one which would permit their being broadcasted on the land; (3) reseeding operations, using any sort of stirring of the soil, are expensive and out of all proportion to advantage gained; (4) seeds of cultivated forage crops, which can be had in sufficient quantity, are not adapted to grow under the dry conditions found on the western ranges.

It is, therefore, evident at the present time that the most feasible way of revegetating the range is by natural reseeding, and not by the introduction and substitution of grasses other than those naturally found growing on the western range. The improvement that we may expect from natural reseeding under proper range management may be expressed in increased carrying capacity from 20 to 100% over what it is now.

In order to bring about a condition of natural revegetation over a of the range, it will require:

1. Federal legislation in order to provide range control;
2. Investigations for each of the principal forage plants making the various grazing types as to—
 - (1) time when plant growth commences and ceases;
 - (2) time of flowering;
 - (3) time of seed dissemination;
 - (4) amount of seed produced;
 - (5) viability of seed produced;
 - (6) all other factors influencing the natural reseeding and establishment of the plant;
 - (7) comparative study of reproduction under—
 - (a) complete protection;
 - (b) existing grazing practises;
 - (c) grazing after seed maturity.

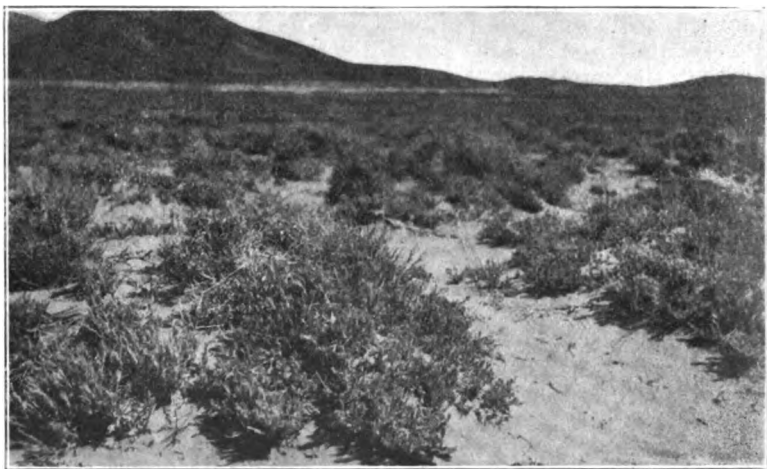


Figure 8—Typical White Sage Range. This type of range supplies the greater bulk of the winter sheep feed and is becoming depleted at an alarming rate.

In order properly to collect all of these data, it will be necessary to have a large area of public domain range set aside purely for investigative purposes. Under existing grazing conditions on the public domain only general observations can be made. It is hoped that in the very near future such an area will be available for the study of the reestablishment of the native forage plants on Nevada's depleted grazing ranges. Several areas have been tentatively selected, but as yet it is not deemed advisable to ask to have them set aside as experimental range reserves.

PROJECT 8—RELATIVE IMPORTANCE OF NATIVE RANGE FORAGE PLANTS

In order to handle most efficiently the public domain range, it is necessary to have a thorough knowledge of the vegetation which makes up the forage crop. This knowledge for each plant must include:

1. Time when plant growth begins and ends;
2. Flowering period;
3. Seed dissemination;
4. Grazing type in which found growing;
5. Relative abundance in each grazing type;
6. Feeding value;
7. Palatability to the various classes of live stock.

The practical application of the above data is to show (1) classes of stock to which each range is best adapted; (2) proper seasons of grazing; (3) carrying capacity of the range; and (4) systems of range management which should be used in order to secure the greatest possible use of the range with the least loss of forage through nonuse.

We plan to collect these data under three headings: (1) grasses; (2) weeds; (3) shrubs. Due to the very arid climate, the place that the grasslike plants or sedges have on the ranges in this State is negligible. Economic data have been collected for twenty-one different plants, but it covers a period of only one year. It will take several more years before these data are of a definite and tangible nature.

PROJECT 9—INTRODUCTION OF FOREIGN RANGE FORAGE PLANTS

This study at the present time merely contemplates the introduction of range forage plants found growing on similar dry ranges in the West, but not found on the ranges in Nevada. Due to lack of time, no plant introductions have as yet been made, and this study will be subordinated until the more important projects are put on a firm working basis.

PROJECT 10—CARRYING CAPACITY OF THE RANGE

So far only data for sheep have been collected, tending to show the average acreage required to support a sheep for a given period of time. The observations were made on summer grazing ranges. During the winter of 1917–1918 definite winter grazing carrying capacity figures will be collected for the winter ranges of the State. Carrying capacity tests for cattle have not been commenced. As soon as suitable conditions are available, such tests will be initiated.

The carrying capacity tests so far indicate that the average acreage required per sheep per 100 days, counting two lambs equal to one ewe, is 1.82 acres. These observations were made on a range where plant composition was made up largely of grasses and weeds, with a scattering growth of browse.

PROJECT 20—WHITE SAGE STUDIES

The white sage (*Eurotia lanata*) is one of the most important plants found growing on the grazing ranges of Nevada. During the winter time it supplies the greater bulk of the grazing for sheep. Practically all of the white sage is found on public domain range. The grazing season during which it is utilized varies, but it ordinarily commences during November and ceases in April and May. The entire plant is of such a nature that practically all of it above the ground is removed during grazing. It has a rather large and extensive root system, so that it is capable of storing much reserve food material.

However, due to excessive grazing, hoofing and grazing too late in the spring, this plant is rapidly being weakened and killed out. There are now large areas where only dead plants remain of what was once

a range with a high carrying capacity. On many ranges most of the plant crowns are practically dead, with only a few remaining live shoots left. It grows usually in a very light-colored soil, apparently high in lime. It is highly relished by all classes of stock, but is essentially a sheep feed. The greatest damage is being done by repeated grazing,

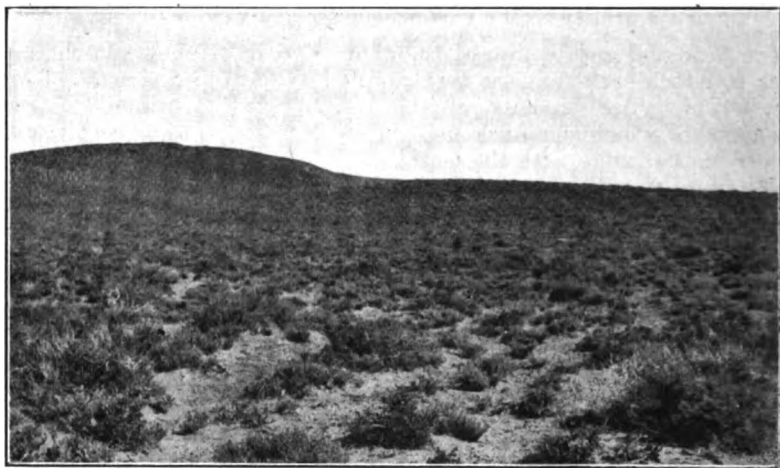


Figure 9—White sage ranch properly grazed during winter, which will produce an abundance of feed for the next year.

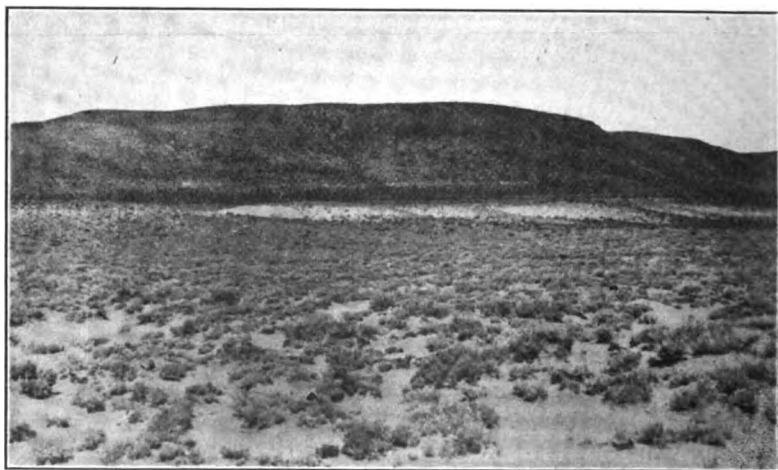


Figure 10—White sage range after severe winter grazing. Only the crowns are left supporting a few bare stems.

not only by the same flock of sheep but by different flocks drifting from one range to another. This late grazing is particularly harmful in the spring of the year when plant growth has commenced, after having been severely grazed during the winter. Just as soon as the young

shoots are produced, mainly from the reserve food supply in the roots, they are grazed off and as a result the plant is materially weakened. This type of grazing is destructive to the plant when it takes place year after year, and this is what is occurring on the white sage ranges of Nevada.

Through the courtesy of the United States Indian Service, a tract of white sage land has been allotted to the Experiment Station for experimental purposes. A part of this area will be fenced. Between 60,000 and 100,000 head of sheep winter in the vicinity of this white sage area. It is, therefore, an ideal location upon which to study the complete biology of the white sage and to supplement the intensive observations by the actual grazing by sheep on a large scale on the white sage range.

On the white sage winter range south of Elko last winter the grazing was supplemented by the feeding of cotton-seed cake. The general conclusions from these feeding operations are:

1. It is profitable and desirable to supplement the white sage with some form of concentrate;
2. It keeps the digestive system in excellent condition, thereby keeping the animal in a healthy, thrifty state;
3. It prevents loss from actual starvation during severe storms;
4. It keeps the mouths from becoming sore, thus preventing starvation losses due to sore mouths.
5. The ewes are in good condition at lambing time, which insures the safety of both the ewe and the lamb;
6. It keeps yearlings and two-year-olds in growing condition.

The costs and definite results of the feeding tests will be available at a later date.

In connection with the carrying capacity tests, data were collected last summer as to the best methods of handling sheep so as to (1) reduce the waste of range forage, due to trampling, to a minimum; (2) the production of the largest range lamb possible; and (3) to increase the carrying capacity of the range. Eight flocks of sheep were under observation; five were herded under the old existing method of returning to a permanent bed-ground each night; and three were allowed to bed where night overtook them. The general results were a saving of from 10 to 20 per cent in the acreage of range required, depending upon the efficiency of the herder; and an increase of from four to seven and one-half pounds in the weight of the lambs, when the sheep were allowed to bed where night overtook them and to graze at all times just as quietly and openly as possible. The methods of herding, bedding, salting, method of field reconnaissance and lamb weights, will be given in detail at a later date.

PUBLICATIONS OF THE STATION FOR THE FISCAL YEAR 1916-1917

Bulletins and Reports.

- No. 84—"Contagious Epithelioma in Chickens (Chicken-Pox. Swelled Head): Its Control by Vaccination," by Winfred B. Mack, D.V.M., Veterinarian and Bacteriologist, and Edward Records, V.M.D., Assistant Bacteriologist. April, 1916.
- No. 85—"The Use of Bacterins in the Control of Fowl Cholera," by Winfred B. Mack, D.V.M., and Edward Records, V.M.D. December, 1916.
- No. 86—"Forage and Root Crops," by C. S. Knight, B.S., Dean of College of Agriculture, and Agronomist of the Agricultural Experiment Station. April, 1917.
- No. 87—"Home Potato Patches," by C. S. Knight, B.S., Dean of College of Agriculture, and Agronomist of the Agricultural Experiment Station. April, 1917.
- No. 88—"Field Crops for Late Planting," by C. S. Knight, B.S., Dean of the College of Agriculture, and Agronomist of the Agricultural Experiment Station. April, 1917.
- No. 89—"Grain Production in Nevada," by C. S. Knight, B.S., Dean of the College of Agriculture, and Agronomist of the Agricultural Experiment Station. April, 1917.
- Annual Report of the Board of Control for the Fiscal Year ending June 30, 1916. Published by the University of Nevada, Reno, Nevada.

Technical Papers, Contributions to Farm Journals, Etc.

- "Industrial Preparedness for Peace," by Dr. C. A. Jacobson. Scientific American, Vol. 115, p. 80, July, 1916.
- "Sheep Poisoned by Western Golden-Rod (*Solidago spectabilis*)," by Stephen Lockett. Journal of American Veterinary Medical Association, Vol. LI, N. S. Vol. IV, No. 2, pp. 214-221. May, 1917.
- "Agriculture in Nevada," by Dean C. S. Knight. Rural World. October 27, 1917.

FINANCIAL STATEMENT

C. H. GORMAN

Nevada Agricultural Experiment Station

IN ACCOUNT WITH

The United States Appropriations, 1916-1917

Items	Hatch Fund	Adams Fund
<i>Debit</i>		
To balance from appropriations for 1915-1916	\$0.00	\$0.00
Receipts from the Treasurer of the United States, as per appropriations for fiscal year ended June 30, 1917, under Acts of Congress approved March 2, 1887 (Hatch Fund), and March 16, 1906 (Adams Fund)	15,000.00	15,000.00
<i>Credit</i>		
<i>Abstract</i>		
By salaries	1. \$9,106.55	\$9,015.46
By labor	2. 1,974.27	2,236.48
By publications	3. 433.82	
By postage and stationery	4. 298.99	118.16
By freight and express	5. 79.15	49.38
By heat, light, water, and power	6. 149.70	168.32
By chemicals and laboratory supplies	7. 224.39	69.97
By seeds, plants, and sundry supplies	8. 249.10	293.31
By fertilizers	9. None	None
By feeding stuffs	10. 221.93	1,045.42
By library	11. 173.11	21.65
By tools, machinery, and appliances	12. 672.52	481.68
By furniture and fixtures	13. 16.10	1.06
By scientific apparatus and specimens	14. 13.55	256.62
By live stock	15. 115.20	1,049.88
By traveling expenses	16. 592.96	186.62
By contingent expenses	17. 21.60	None
By buildings and land	18. 662.06	18.00
By balance	0.00	0.00
Totals	\$15,000.00	\$15,000.00

We, the undersigned, duly appointed Finance Committee of the Corporation, do hereby certify that we have examined the books and accounts of the Nevada Agricultural Experiment Station for the fiscal year ended June 30, 1917; that we have found the same well kept and classified as above; that the balance brought forward from the preceding year was \$0 on the Hatch Fund and \$0 on the Adams Fund; that the receipts for the year from the Treasurer of the United States were \$15,000 under the Act of Congress of March 2, 1887, and \$15,000 under the Act of Congress of March 16, 1906, and the corresponding disbursements \$15,000 and \$15,000; for all of which proper vouchers are on file and have been by us examined and found correct, leaving balances of \$0 and \$0.

And we further certify that the expenditures have been solely for the purposes set forth in the Acts of Congress approved March 2, 1887, and March 16, 1906, and in accordance with the terms of said Acts, respectively.

(Signed) EDNA C. BAKER,

J. W. O'BRIEN,

Finance Committee Board of Regents.

[SEAL]

Attest: (Signed) C. H. GORMAN, Custodian.



AGRICULTURAL EXPERIMENT STATION
THE UNIVERSITY OF NEVADA

Annual Report of the Board of Control for the Fiscal Year Ending June 30, 1918

PUBLISHED BY THE UNIVERSITY OF NEVADA
RENO, NEVADA



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT
1919



NEVADA AGRICULTURAL EXPERIMENT STATION

BOARD OF CONTROL

HON. JAMES F. ANEL (1917-1921), Chairman	Reno
HON. JAMES W. O'BRIEN (1915-1919)	Sparks
HON. JOHN J. SULLIVAN (1915-1919)	Reno
HON. B. F. CUMLER (1917-1921)	Elko
HON. EDNA C. BAKER (1917-1919)	Sparks

OFFICERS

WALTER E. CLARK, Ph.D.	President of the University
Mrs. L. B. BLANEY, B.A.	Secretary
CHARLES H. GORMAN	Comptroller

STAFF

SAMUEL B. DOTEN, M.A.	Director and Entomologist
CHARLES S. KNIGHT, B.S.	Agronomist
GEORGE HARDMAN, M.S.	Assistant Agronomist
CHARLES E. FLEMING, B.S.A.	Range Management
N. F. PETERSON, B.A., M.A.	Assistant in Range Management
EDWARD RECORDS, V.M.D.	Veterinarian
LEWIS H. WRIGHT, V.M.D.	Assistant Veterinarian
M. R. MILLER, B.S.	Chemist
MAXWELL ADAMS, Ph.D.	Consulting Chemist
PETER FRANSEN, A.M.	Consulting Biologist
FREDERICK W. WILSON, M.S.	Consulting Animal Husbandman
VERNER E. SCOTT, B.S.	Consulting Dairy Husbandman
Mrs. T. W. COWGILL, M.A.	Librarian
RUTH MILLER, B.A.	Secretary to Veterinary Department
HESTER MAYOTTE	Secretary to Director

FINANCIAL STATEMENT

By C. H. GORMAN

Nevada Agricultural Experiment Station

IN ACCOUNT WITH

The United States Appropriations, 1917-1918

Items	Hatch Fund	Adams Fund
Debit		
To balance from appropriations for 1916-1917	\$0.00	\$0.00
Receipts from the Treasurer of the United States, as per appropriations for fiscal year ended June 30, 1918, under Acts of Congress approved March 2, 1887 (Hatch Fund), and March 16, 1906 (Adams Fund)	15,000.00	15,000.00
Credit		
By salaries	\$8,892.64	\$9,789.13
By labor	1,869.10	734.95
By publications	563.89	.....
By postage and stationery	401.24	24.63
By freight and express	155.40	72.77
By heat, light, water and power	153.40	23.10
By chemicals and laboratory supplies	368.47	372.67
By seeds, plants and sundry supplies	309.81	261.27
By fertilizers	0.00	0.00
By feeding stuffs	177.82	1,248.04
By library	65.70	5.75
By tools, machinery and appliances	243.74	258.22
By furniture and fixtures	575.98	20.65
By scientific apparatus and specimens	2.33	46.67
By live stock	30.00	1,562.46
By traveling expenses	697.23	306.65
By contingent expenses	25.00	0.00
By buildings and land	463.15	273.04
By balance	0.00	0.00
Total	\$15,000.00	\$15,000.00

We, the undersigned, duly appointed Finance Committee of the Corporation, do hereby certify that we have examined the books and accounts of the Nevada Agricultural Experiment Station for the fiscal year ended June 30, 1918; that we have found the same well kept and classified as above; that the balance brought forward from the preceding year was \$0 on the Hatch Fund and \$0 on the Adams Fund; that the receipts for the year from the Treasurer of the United States were \$15,000 under the Act of Congress of March 2, 1887, and \$15,000 under the Act of Congress of March 16, 1906, and the corresponding disbursements \$15,000 and \$15,000; for all of which proper vouchers are on file and have been by us examined and found correct; leaving a balance of \$0.

And we further certify that the expenditures have been solely for the purposes set forth in the Acts of Congress approved March 2, 1887, and March 16, 1906, and in accordance with the terms of said Acts, respectively.

(Signed) EDNA C. BAKER,

J. W. O'BRIEN,

Finance Committee.

[SEAL]

Attest: C. H. GORMAN, Custodian.

WINFRED BERDELL MACK

Born March 22, 1872

Died January 18, 1918

Winfred Berdell Mack was born on March 22, 1872, at Vermillion, State of New York. He received his early education in the public and high schools of Mexico, New York, and after graduation taught in the district schools for a few years. He then took up a business and commercial career for a number of years, which developed in him a rare knowledge and judgment of men which was useful to him later in his profession.

Having obtained the business experience he wanted, he decided that he needed a college education and that his real interests were in science. From the time he began as a Freshman, his associates marked him out as an exceptional student of rare scientific ability. He graduated from the New York State Veterinary College of Cornell University with the degree of D.V.M. While in Cornell, he held a fellowship in bacteriology and assisted in teaching several courses. Dr. Soper of New York City, who directed the investigation of the Ithaca typhoid epidemic of 1903, was assisted in this work by Dr. Mack, and especially commended his work.

In 1899, Dr. Mack was married to Miss Olla M. Symonds of Fulton, New York.

In 1906, Dr. Mack came to Nevada as the head of the newly established Department of Veterinary Science and Bacteriology. In the eleven years of his service to the University and State, the Department has grown and extended its activities so that it now numbers four scientific investigators, with laboratory and office assistants, and keeps in touch with the animal diseases of the entire State. Besides directing the scientific researches of the laboratory, Dr. Mack was at the time of his death Director of the State Veterinary Control Service, ex officio State Quarantine Officer, Secretary of the State Board of Stock Commissioners, and ex officio member and Secretary of the State Rabies Commission.

Dr. Mack's whole life was wrapped up in his work and he exhausted his energy in order that no call for service might go unanswered. Up to a few weeks before his death, even when confined to his bed, he directed the work of his department as usual. The results of the various investigations are embodied in a number of valuable scientific reports and bulletins.

He was Resident Secretary for Nevada of the American Veterinary Medical Association and was also a member of the Society of American Bacteriologists and of the United States Live Stock Sanitary Association. He belonged to the honorary societies of Sigma Psi and Phi Kappa Phi. In addition to his professional work, he was also a director of the Union Building and Loan Association, and took an active interest in public and state affairs.

PETER FRANDSEN,
EDWARD RECORDS.

LIST OF ACTIVE PROJECTS, 1918-1919

Project 1. Irrigation Experiments. (Hatch Fund.) 1914-1919. Project Leader, C. S. Knight.

The purpose of these experiments has been to determine the amount of water needed for the production of various crops. It is evident that in many portions of Nevada too much water is used where water is abundant, and it is equally evident that in other portions of the State a short supply of water is used somewhat unwisely. There are stages in the growth of every plant at which water is especially necessary. In this project it is Dean Knight's purpose to find out at what stage of growth water is most essential and to find out how many irrigations and what quantity of water will produce the best results with grain crops, potatoes, and alfalfa. The fact that during the past five years the summer rainfall has been scanty has made it possible to obtain results which were not in any way confused by rain; that is, differences in crop yields under this experiment have been due entirely to differences in the amount of water supplied and in the time of application.

Project 2. Variety Testing and Crop Improvement. (Hatch Fund.) 1914-Continuous. Project Leader, C. S. Knight.

Under this project, Dean Knight studies varieties of grain, alfalfa, potatoes, and other crops which are best suited to Nevada soils and climate.

Project 25. Methods of Increasing Hay Production in the Humboldt Valley, Nevada. (Hatch Fund.) 1919-1924. Project Leader, C. S. Knight.

For some years it has been evident that in the Humboldt Valley the yield of hay has been less than it should be because of the methods of irrigation employed. It is the purpose of this project to show the effect of different methods of irrigation upon crop yields and to show how a better quality and greater quantity of hay may be obtained in the Humboldt Valley by a change in the methods of irrigation. This project will be fully outlined in the spring of 1919. The work will be carried on in cooperation with the Bureau of Public Roads and Rural Engineering, United States Department of Agriculture. The department has assigned an engineer, Mr. F. L. Bixby, to this project.

Project 5. Insects Injurious to Alfalfa. (Hatch Fund.) 1916-Continuous. Project Leader, S. B. Doten.

This project is a study of grasshoppers, cutworms, and other insects which attack alfalfa in Nevada.

Project 23. Revegetation of Depleted Ranges. (Hatch Fund.) 1916-Continuous. Project Leader C. E. Fleming.

Under this project, studies of Nevada range conditions have shown that many Nevada ranges on the public domain are nearly ruined and that on others the carrying capacity is steadily falling off. It has become clear, moreover, that little or nothing can be done on the open

public-domain ranges to improve conditions. On ranges privately held or held under the control of the United States Forest Service, an improvement in range pasturage is easily brought about by adapting the method of handling sheep and cattle to the habits of growth of the plants and grasses on which these animals feed.

Project 24. Methods of Increasing the Percentage of Lambs in Nevada Flocks. (Hatch Fund.) 1919-1921. Project Leader, C. E. Fleming.

This project is a study of methods of feeding ewes in the winter and spring for the purpose of increasing the percentage of healthy lambs in Nevada flocks.

Project 15. Equine Anemia. (Adams Fund.) 1908-Continuous. Project Leader, Dr. Edward Records.

This is a study of a common disease of horses in Nevada. As equine anemia appears to be always present, although varying in amount from year to year, and as losses caused by it are important, the disease has been kept continually under study for a long period both in Nevada and in adjacent States. The work has been exceedingly difficult and baffling, and no definite results have yet been obtained. These studies are, however, to be continued in the hope that in the long run they will lead up to methods of control.

Project 16. Hemorrhagic Disease in Cattle. (Adams Fund.) 1914-Continuous. Project Leader, Dr. Edward Records.

This disease is one which has not been completely diagnosed either in Nevada or in any adjoining State where it occurs. The cause of the complaint is unknown, although the conditions under which it is most apt to occur have been observed. Still, without definite knowledge of the cause of the disease, important progress has been made toward its control. It is hoped that a few years more of study may clear the entire matter up and make it possible both to prevent the disease and to cure it after it has occurred.

Project 18. Contagious Epithelioma in Fowls. 1914 (Hatch Fund); 1916 (Adams Fund). Project Leader, Dr. Edward Records.

Heavy losses are sometimes caused by "roup" or contagious epithelioma in fowls in Nevada. Methods of control have been worked out and it is hoped so to perfect them that under proper treatment epidemics may be immediately checked.

Project 19. Biting-Flies of Cattle. (Adams Fund.) 1916-1921. Project Leaders, J. L. Webb, United States Department of Agriculture, and S. B. Doten, Nevada Station.

This project is a study of biting-flies which cause serious annoyance and even considerable loss in the livestock industry in certain portions of Nevada. The habits of the flies have been worked out; their breeding places have been determined, and it is hoped that in a general way it may be possible to show methods by which these insects can be controlled. The work is done as a cooperative project shared equally between the Nevada Station and the United States Department of Agriculture, whose Bureau of Entomology detailed a man to undertake the work on a cooperative basis.

Project 20. White Sage Studies. (Adams Fund.) 1916-Continuous.
Project Leader, C. E. Fleming.

The present condition of the winter range in Nevada has caused anxiety among sheep and cattle owners, at whose request a study of the white sage was undertaken in the hope that methods of preventing further injury to white-sage ranges might be worked out.

Project 22. Poisonous Range Plants. (Adams Fund) 1916; (Hatch Fund) 1918-Continuous. Project Leader, C. E. Fleming.

This project is a study of a large number of poisonous plants found on Nevada ranges for sheep and cattle. The purpose of the project is to determine in the first place which plants are poisonous and how great a quantity of the plant is required to produce fatal poisoning. Methods of handling sheep and cattle on the range in such a way that poisoning will be less likely to occur are being worked out, together with methods of destroying certain plants which may be locally exterminated.

ADMINISTRATION

THE RELATION OF THE AGRICULTURAL EXPERIMENT STATION TO THE STATE

Science in the Experiment Station.

In the section on Administration in the Annual Report of the Nevada Station for the fiscal year ending June 30, 1914, the scientific basis of station work was fully discussed and also the type of organization required to maintain the distinction between research work and extension and demonstration. Emphasis was placed on the fact that the work of an experiment station must conform to a standard of scientific investigation founded on the world's experience in research; and that conditions in the station must favor the scientific spirit.

Conditions in a state university and in the station which is a part of the larger organization must favor the scientific spirit—the spirit which seeks the truth and bases its conclusions on evidence. Yet the scientific standard alone is not sufficient. Truly, it enables us to judge the accuracy of conclusions and to determine their relation to facts previously known. Still, painstaking accuracy of method and logical completeness of plan alone give no safe guide, no standard for judging the local suitability of any proposed piece of work or its advisability. That is, it would be possible for a station to do work of irreproachable scientific character and yet to have much of its activities lie outside its own proper field. Another standard is needed.

By what standard shall we decide upon the relative amount of support to be given to different departments in the station? How are we to decide upon the sums to be allotted to various projects? Why grant perhaps twice as much to one station project as another? Shall we base our decisions upon the scientific training of the men, or upon the scientific character of their proposed work, or upon the care and accuracy of the plan for work presented, or its detailed completeness? Only in part.

The standard required in the intelligent allotment of money to various departments and projects of the station is found in the standard of public service and in the nature of the experiment station as a public-service institution.

Aid to Industry.

Agricultural experiment stations were founded in the various States in order that they might be of assistance to agriculture in each of these States. The purpose of the American experiment station is to solve by scientific methods the problems of the local agricultural industry. This is what may fairly be expected of them by the people of the States in which they are located. And in setting up a standard by which to judge projects and lines of work in the stations, this purpose must be kept constantly in mind. The relation of the stations to the industry for whose benefit they were founded may be stated in the following terms:

- (1) The agricultural experiment stations were founded to aid an industry—agriculture.
- (2) Their basis is economic.
- (3) Their function is to obtain information of use in the solution of agricultural problems.
- (4) Their method is scientific.

All that we have said earlier about the importance of the scientific method has been said because of the necessity of getting indisputable evidence on which to base safe conclusions. The scientific method is merely a logical, sensible method of basing safe conclusions upon carefully tested evidence. Still, on method alone no lasting station policy can possibly be founded. If, in enthusiasm for the scientific method, or in a zeal for making contributions to the sciences, we lost sight of the economic relation and purpose of the stations we may readily reach a point where funds are allotted because of the scientific character of the work and its possible contribution to science, rather than because the work is vitally needed for the solution of agricultural problems.

The project in the station is on safe ground when it represents an attempt to solve by scientific methods some problem in an agricultural industry. The simple thing, the obvious thing, is to determine first of all what are the problems of the agricultural industry to which the scientific method of solution is to be applied.

Finding the Field for Work.

It is an interesting thing to imagine how we would begin experiment station work in a part of the United States where such work has never before been done. What would be our lines of work and what our projects? What departments would we establish? First of all in such a case, we would make a careful study of local agricultural conditions in order to find the leading problems; after discovering these problems, we would be in a position to decide what sciences were needed for their solution. In most of the States the problems would fall into large groups corresponding to the agriculture of the region, as determined by soil, climate, and markets.

For example, in a region with a large livestock industry we would immediately discover groups of problems in feeds and feeding and in animal diseases. If the feeding problems seemed of primary importance, we would then plan long series of feeding tests and we would establish in the new station a department of animal husbandry. If the problems of animal disease were of fundamental importance, we would organize a department of bacteriology and veterinary science.

In a fruit-raising region, we would probably establish first of all a strong department of horticulture. Departments would be organized for the study of insect pests and plant diseases, corresponding to the department of animal diseases in a cattle-raising State. That is, from the very beginning the departments and projects of the experiment station would represent vital problems of the State's agriculture.

Science Because of Its Usefulness.

The scientific method would be insisted upon and most carefully guarded. From the beginning every effort would be made to maintain in the new station the scientific spirit, even in the simplest and most elementary problems; but this would be done not for the sake of making contributions to the sciences, but for the sake of the practical use-

fulness of the scientific method in obtaining facts based upon genuine evidence. However, the standard of judgment by which the relative importance of departments and of projects would be determined would still be not the scientific character of the work, nor the relative scientific character and training of the men, but the nature of the problem, its importance to agriculture, and the permanence of the need for its investigation.

Upon this standard of essential service the station would found its experimental and investigational work, and this standard would determine the departmental organization; the equipment and personnel of the departments and year by year the nature of the annual allotments of funds. Only by close adherence to this standard through the years could the station be maintained in a state of flexibility, ready to meet needs as they might arise and to give the most useful service to the local farming industry.

Reorganization of the Nevada Station.

In the course of the past five years the Nevada Agricultural Experiment Station has been completely reorganized. The movement began under the directorship of Professor Gordon H. True, who resigned at the end of his first year's service as Director to accept a more lucrative position in his own field of special training in the University of California. Professor True showed a clear understanding of the nature of experiment station work and began the reshaping of the work of the Nevada Station along lines of more helpful public service. Mr. True realized that an experiment station was founded under federal funds in each of the States in order that it might give direct assistance to the agriculture of that State in the solution of its vital problems. From this point of view it is evident that the personal enthusiasm and interest of members of the Station Staff must be subordinated, in the spirit of public service, to well-disciplined work for the good of the agricultural industry.

Upon the present Director, in the fiscal year 1913-1914, fell the responsibility of developing the organization and policy of the Nevada Agricultural Experiment Station. From the beginning the reorganization has been supported and encouraged by the President and the Board of Regents of the University. They have aided the present Director in every way in the development of projects which promise assistance to Nevada agriculture.

If the peculiar conditions found in Nevada and the problems presented by our agriculture are taken as the basis of our studies, then the work of the Nevada Station must be based upon three great groups of problems—the water problems, problems of animal disease, and range problems.

The Water Problems.

First of all, the water problems are exceedingly important. The immense acreage of good land in Nevada is good land only as water makes is so. In favorable years in certain parts of the State dry-farming is successful, but, taking the State as a whole, its success is doubtful. The fundamental farming problem in Nevada, based on immense acreage, scanty rainfall and a totally inadequate supply of water for irrigation, is this: How can we gain the greatest yield per acre-foot of water? In Nevada it is not a question of the maximum

crop per acre of land. It is a question of the greatest crop value per inch of water. Here is a legitimate field for investigation and experimental work, the study of methods of making our small available water supply yield as heavily as possible.

One of the first things done, then, in the reorganization of the Nevada Station, was to establish in 1913-1914 under C. S. Knight, Dean of the College of Agriculture, a study of the amount of water actually needed by the principal crops grown in Nevada and of the stages at which irrigation is most important, with the number of irrigations and the quantity of water actually required. These experiments have been continued for nearly five years, and the work has been done with skill and care and painstaking thoroughness.

Problems of Animal Disease.

The second great group of problems self-evident in Nevada agriculture are the problems of animal disease. By all odds the greatest export crop of the State is its annual output of sheep and cattle and their products. In the year 1917 the value of these products on ranches and farms was as follows:

Sheep.....	\$11,931,000.00
Cattle.....	18,565,000.00

Of other agricultural crops the values were as follows:

Potatoes.....	\$3,726,000.00
Hay.....	10,796,000.00
Apples.....	307,200.00
Wheat.....	2,052,000.00

It is easily seen from the above figures how the sheep and cattle industries overtop every other form of agriculture in this State. Nor is this merely a temporary condition. Truly, in very many of the other Western States the old range has been broken up into farms; and the livestock industry has almost vanished or has been very greatly changed. In Nevada this is not the case, and never can be; for most of the sheep-and-cattle ranges are hill ranges or mountain ranges, far too high and too steep for farming. In northern and central Nevada the valleys lie so far above sea-level that cool summer nights and a short growing season restrict the kinds of crops that may be grown. The irrigated mountain valleys, however, are admirably suited to the production of hay; and hay is needed for the winter feeding of range live stock. So, based upon a great sheep-and-cattle industry, we have ranches and farms where large quantities of grass hay and alfalfa hay are raised, ranch and range together forming the foundation of a permanent livestock industry.

Animal diseases are, of course, found in Nevada as elsewhere. With the growing cost of meat and a corresponding increase in the value of sheep and cattle, disease problems grow in importance. Therefore, one of the most important fields of public service for the Nevada Station is a study of such diseases. For this reason it has been as wise as it was important to expand considerably the Department of Veterinary Science and Bacteriology and to grant that department in the Station a personnel and equipment which would let it give to the livestock industry of Nevada a greatly needed scientific service.

This department has proven its usefulness, not only to the large

livestock owners, but to the small farmers as well. In districts dependent on the dairy industry and upon hog-raising and chicken-raising problems of animal disease press heavily upon the small farmer. Under Nevada conditions the Agricultural Experiment Station is in a position to be of even greater assistance to the small farmer than to the large owner of live stock. The man who has thousands of head of cattle and sheep running at large on the public domain does not feel the loss of a number of animals as much as the small farmer with only a few head of stock and a restricted range. The strengthening of the Department of Veterinary Science and Bacteriology in the Experiment Station has met an instant response from the people of the State who are quick to feel that in this department the University is giving the State an essential public service.

Range Problems.

The third large group of problems plainly evident in Nevada agriculture, are the problems of diminishing pasturage on summer and winter range. The effect of the overstocking of ranges, the gradual but sure disappearance of valuable grasses and forage plants from the open public domain, is evident throughout the whole West. Like other Western States, Nevada feels more and more every year the injurious effects of overgrazing, although local conditions have in many instances established control and prevented to some degree the most severe overstocking.

Ranch and range in Nevada are so closely tied together by economic conditions that in many portions of the State a ranch would be useless without its adjacent range. It is easy to find parts of Nevada where the favorable local climate and soil conditions make it possible to grow the finest celery, onions, apples, and other relatively high-priced products. Still, the land must be put into hay and kept in hay year after year because there is no local market for the other products and the expense of shipment to a distant market is prohibitive. Hay is needed for the cattle; and the land yields alfalfa and wild grasses abundantly. The hay would be of little or no value if it were not for the adjacent range. As it is, the hay is fed on the ranch and later the cattle are driven out for shipment.

For the study of range problems the Nevada Station established in 1915 a Department of Range Management, headed by C. E. Fleming formerly in charge of the Jornada Grazing Reserve of the United States Forest Service. In the past two years this department has done admirable work in the study of poisonous range plants and other range problems.

General Policy of the Nevada Station.

In the reorganization of the Nevada Agricultural Experiment Station outlined in the last few pages, the first question asked was: "What are the leading agricultural problems of the State on which departments and projects in the Station should be based?" The answer is: "The principal problems are water problems, animal disease problems, and the range problems."

Still, the answer is, of course, incomplete in some particulars. There is a limited horticulture along the western border of Nevada. Potatoes are grown to some extent. There are certain spots where apples may be grown at a profit; then there is a rich fruit belt lying at a low

altitude along a tributary of the Colorado River below Moapa, Nevada; and, in various portions of the State, there are valleys where dry-farming is under trial. Still, on the whole, the three great groups of problems mentioned above are the leading ones, and it is in connection with these that most of the work of the Station is being done.

This does not mean, however, that our work is confined exclusively to these three problems. These three are always at hand; but problems of insect pests and plant diseases and other matters come up from time to time, and solutions must be sought if the Station is to give the fullest service. In brief, it is the policy of the Nevada Experiment Station to found its work upon the actual needs and problems of the State and to base its allotments to projects and departments upon the standard spoken of in preceding paragraphs, the standard of usefulness to the agricultural industry. At the same time every effort is made to maintain a high scientific standard in the work, for the simple reason that the most useful information is that which is securely founded upon unimpeachable evidence.

Based upon the needs and the problems of Nevada agriculture, the policy of the Station is impersonal. In the organization of departments and the development of projects the first principle is a recognition of the real needs and merits and problems of the State. Thus, the policy and the field of work in the Station are dependent, not so much on personality or opinion, as upon a sound judgment of problems and of methods for their solution. The field of work of the Station is determined by the State's agriculture. The projects of the Station are based on problems of agriculture. They are essentially independent of change in either administration or staff.

Close cooperation between the divisions of the Station is highly essential. Department heads working in the spirit of public service will often find themselves obliged to subordinate their own likes and dislikes and to limit their work severely to the actual needs and problems of our agriculture. This may be true, even at a time when the scientific interest attaching to a new discovery, or to lines of work readily possible may make the experimenter ardently anxious to carry his investigations afield into pure science.

The work of reorganization in the Nevada Station has received consistent support from the University administration and a most cordial approval on the part of the Office of Experiment Stations, Washington, D. C. In fact, it would have been very difficult without the assistance of Dr. E. W. Allen, Chief of that Office. Dr. Allen has insisted upon the redirection of the Station's activities; and at times when it seemed very difficult he has given most useful counsel and encouragement. To his initiative as well as to his support, a large share of credit for recent progress in the Nevada Station is undoubtedly due. As a direct result, because of the development of experiments and investigations which promise to be useful to the State, the Station itself is gaining steadily in the respect and support of its constituency.

REPORT OF THE DEPARTMENT OF ENTOMOLOGY

By S. B. DOTEN

Project 19. Adams Fund. Biting-Flies of Cattle.

This is a study of certain biting-flies which are abundant and injurious on cattle pastures in parts of Nevada and California. The flies cause the cattle to bunch up in the middle of the day instead of feeding. The constant annoyance causes them to fall off in weight or to remain at a standstill, instead of putting on flesh, although feeding on rich pasturage.

The purpose of this project is to learn the habits and breeding places of the flies, with their earlier stages of growth and development,

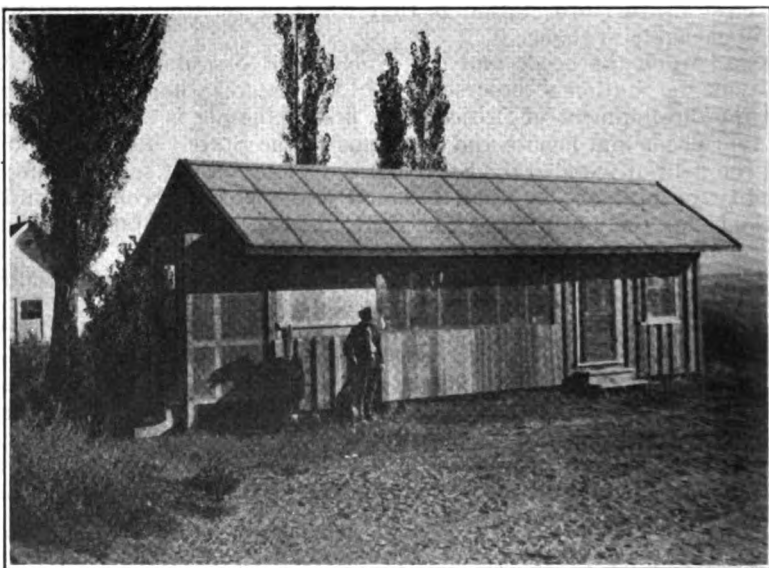


Figure 1. Insectary for the Study of Biting-Flies, Antelope Valley, Nevada and California.

in order to find out whether artificial methods of control are practical under the circumstances.

The work has been done jointly by the Bureau of Entomology of the United States Department of Agriculture and the Nevada Agricultural Experiment Station. In 1917 an insectary was constructed at Topaz in Antelope Valley for the study of the flies in the midst of an infested region. Mr. J. L. Webb of the United States Bureau of Entomology was assigned to the project. He has been assisted by two young men from the University of Nevada, Mr. Rufus Ogilvie (1917) and Mr. Noble Waite (1918).

In the last two seasons it has become evident that while a number of different kinds of biting-flies are troublesome in the region under study, most of the annoyance and injury is caused by a single species,

a horse-fly of medium size, *Tabanus phænops*. The males do not bite; but the females obtain a part of their food from the blood of cattle and horses.

During the late afternoon and early morning hours the females rest in dry grass or in other concealed situations, feeding only during the brighter and hotter hours of the day.

Mr. Webb has worked out the life-history of this fly almost completely and has found that the eggs are laid on short grass over swampy meadow lands; that the maggots drop from the eggs to the mud of these meadows where they live and grow for two or more years until mature. The life-histories of the other flies which cause annoyance in the region have been partially worked out. In the course of the coming summer all these studies will probably be completed.

In the summer of 1919 this project will be terminated and the results



Figure 2. Plant-lice on Alfalfa. *Macrosiphum creellii*. Living specimens magnified ten diameters; that is, one hundred times natural size.

will be published later as a joint bulletin of the United States Bureau of Entomology and the Nevada Agricultural Experiment Station.

There is no indication that the introduction of parasitic insects will be of value in controlling this pest; nor does it seem at all probable that practical methods of artificial control will be discovered. Apparently the only thing which will bring about any great change in the biting-fly situation will be a change from ranching to farming. The breaking up and drainage of the great areas of wild-grass meadow and swamp lands, together with the changes brought about by raising grain and alfalfa, will establish soil and water conditions under which apparently the biting-fly maggots will not thrive.

The general economic situation promises to bring about such changes in the near future. The rising value of land makes it scarcely profitable to leave rich soil in an undrained, half-swampy and unproductive condition. Apparently just as soon as the wet meadows are drained and broken up and planted to grain or alfalfa, conditions will be established which will not favor the breeding of biting-flies. This conclusion will be carefully tested another year by a study of the reclaimed portions of Antelope Valley, to determine whether the flies under study do breed at all in alfalfa fields or along properly constructed laterals and drain ditches.

The Bureau of Entomology of the United States Department of Agriculture is certainly entitled to credit for the patience and persistence with which its representative, Mr. J. L. Webb, has successfully studied this unusually difficult problem.

Project 5. Hatch Fund. Insects Injurious to Alfalfa.

The Alfalfa Plant-Louse, *Macrosiphum creelii*. This small green plant-louse often appears in the spring in alfalfa fields in various parts of Nevada. It is frequently abundant enough to retard seriously the growth of the first crop of hay, especially when weather conditions are favorable. Under such conditions the alfalfa is short and stunted, not more than two or three inches high when it should be twelve inches or more. The leaves are gummed up with the clear, sticky honey-dew excreted by the insects, and every stem is covered with a mass of plant-lice.

Under these conditions, although seriously checked, the alfalfa may make a fair first crop or even a good stand, maturing later than the hay in the uninfested fields. The stickiness of the honey-dew causes the mower blades to gum up in cutting; and this is an additional source of annoyance and loss.

Apparently this insect is widely distributed in western America, frequently causing considerable losses. Present conditions on the ranges for sheep and cattle in Nevada and throughout the West make any injury to the hay crops especially important.

Very little is known about the life-history and habits of this plant-louse. For this reason it is probable that in the near future a detailed study of the matter will be undertaken. An insectary will probably be erected in the midst of infested fields; and the life-history of the pest will be worked out.

REPORT OF THE DEPARTMENT OF AGRONOMY

By C. S. KNIGHT

PROJECT 1—IRRIGATION EXPERIMENTS

Irrigation Experiment with Alfalfa, Potatoes, and Wheat

The object of this investigation was to determine the critical stages in the irrigation of each crop and to show at what stages of growth the plants are best able to be deprived of an application of water without causing serious injury to the crops; also to determine the amount of water required for the greatest production, and the production with small applications at different stages. With potatoes and alfalfa a comparative study was made of the plants at different stages of growth with different methods of irrigation to determine the proper stages to irrigate these crops, and the proper amount of water to use at each application for the best results. With wheat the object was to determine at which stage or stages of growth an application of water may be eliminated without greatly affecting the yield of grain, and to determine whether or not two applications of water prove as effective as three or more applications with the same amount of water used.

Irrigation Investigations with Alfalfa, 1915-1917

During the three-year period, 1915-1917, experiments were conducted in the irrigation of alfalfa to compare the water content of the plant, the proportion of leaves to stems, the yield per acre and the yield per acre-foot of water, when irrigated with different depths of water and at different stages of wilting.

In these experiments the water was measured into the plats through two-inch galvanized iron pipes; and check plats were used to eliminate as far as possible the effect of variations in soil. The alfalfa was irrigated by the border method of flooding, using small furrows about three feet apart to provide a more ready channel for the water to the lower end of the plats. The head of water was so regulated as to prevent any run-off. The results herein recorded are, therefore, based upon the actual water used by the plats under the varying conditions presented.

When to Irrigate Alfalfa

A too common practice of irrigating alfalfa in Nevada is to apply water to the crop at regular intervals with little regard to the actual needs of the crop for water or to a possible injury to the soil by excessive irrigation.

One of the chief objects of these experiments was to study various depths of irrigation at different stages of wilting to determine the effect on the yield per acre and the yield per acre-foot of water.

The tests indicate that for the most practical results alfalfa is best irrigated when the leaves have turned dark-green in color and have begun to droop, using 12-inch applications. Under these conditions, alfalfa produced an average of 5.18 tons per acre with 36 inches of water, thus giving a yield of 1.73 tons per acre-foot of water.

The use of 12-inch applications before the plants showed need of

water produced the highest yield of 6.63 tons per acre with 80 inch of water, which gave a yield of less than one ton per acre-foot of water.

The continuous use of needlessly heavy irrigations may cause serious injury to the soil by producing a water-logged condition or washing down the soluble plant-food below the reach of the feeding roots.

The soil on our test plats is a sandy clay with considerable capacity for holding water. On lighter soils more frequent lighter applications will be required to prevent the washing down of soluble plant food and a loss of water by percolation.

In these experiments alfalfa responded better than wheat or potato to heavy applications of water.

Amount of Water Applied

These results indicate that under normal soil conditions, in Nevada the most desirable amount of water for alfalfa will vary between 36 and 48 inches. The crop did not use economically more than this amount. Also continuous excessive irrigation lowers the productive power of the land.

The most economical use of water was obtained with an average annual total irrigation of 36 inches with 12-inch applications. The highest yield was obtained with a total irrigation of from 6 to 7 feet of water in 12-inch applications, but was accompanied by a low yield per acre-foot of water and an inferior quality of hay, due to the large proportion of coarse stems to leaves.

The decrease in total depth of irrigation was accompanied by a corresponding decrease in the water content of the plant and in the yield per acre. There was, however, an increase in the proportion of leaves to stems and in the yield per acre-foot of water.

Relation of the Soil Moisture Content to the Time and Amount of Irrigations

In conducting these experiments on the irrigation of alfalfa so samples were taken at regular intervals during the period of irrigation to determine the variations in moisture content in relation to the time of irrigation and the depth of each application.

An increase in soil moisture content at harvest was noted with the 6-inch application in the first two stages of wilting and with the 9-inch application in the first stage, due in part to the frequency of irrigation. The greatest increase occurred with the 9-inch application and a total irrigation of 63 inches.

The most uniform decrease in moisture content at harvest was found in plots where the alfalfa was not irrigated until the leaves turned dark-green and began to droop. Here the total irrigation and the yield per acre increased as the depth of application became greater, while the yield per acre-foot of water decreased.

The yields per acre with the 6- and 9-inch irrigations applied when the alfalfa had turned dark-green, but had not yet begun to wilt, compared with a 12-inch irrigation applied after wilting had begun, showed but little difference. Still a great decrease of 35.4 per cent in moisture content at harvest with the 12-inch application, together with the high yield per acre-foot of water show that this was the most practical and economical use of water of these three methods.

When the alfalfa was irrigated before it showed any need of water or just as soon as it began to turn dark, the results indicated that when the total irrigation exceeded an average of from three to four feet, the

soil moisture content at harvest increased, thus showing that the excess of water applied was not used by the alfalfa.

Results of Irrigation Investigations with Wheat

In these experiments all wheat plats were irrigated at two or more of the five stages of growth, including the five-leaf, boot, bloom, milk and dough stages. The plats were about one-tenth acre in size, thus making possible the planting, irrigation and harvesting of the crop under normal field conditions.

Best Results with 28 Inches of Water in Four Applications

In this experiment the best results were obtained with 28 inches of water in four applications, omitting the irrigation at the five-leaf stage. The average results shown above are strongly in favor of the 7-inch applications. Very little difference was noted in yield of wheat when irrigations were omitted at the milk and dough stages, respectively. The lowest yields with both 3-inch and 7-inch applications were found with irrigations omitted at the boot and bloom stages, respectively.

When 7-inch applications were given at each stage of growth, or a total of 35 inches of water, the yield was 32.8 bushels per acre, or about 4 per cent less than where only 28 inches of water were applied and the irrigation omitted at the five-leaf stage. This may be attributed to the greater development of root system, with the first irrigation omitted, and at the same time the plants did not suffer from lack of sufficient moisture before the irrigation at the boot stage.

Results with Three Applications

The results were also in favor of the 7-inch applications, although the variations in yield were much more pronounced. The highest yield of 32.4 bushels per acre was obtained with 21 inches of water in three irrigations with applications omitted at the five-leaf and dough stages. The three lowest yields with 7-inch applications, averaging 21 bushels per acre, were obtained with irrigations omitted at the five-leaf and boot, bloom and milk, and boot and bloom stages, the last yield being 19.7 bushels per acre.

The low yields with both 3-inch and 7-inch applications when irrigations were omitted at the boot and bloom stages, indicate that the most critical period in the irrigation of wheat is between the boot and milk stages. When irrigations were omitted at the five-leaf and milk, and five-leaf and dough stages, very little difference was found in the yield, the average being 30.3 bushels per acre with 21 inches of water in three applications.

Yield per Acre-Foot of Water with Three and Four Irrigations and 7-inch Applications

It is interesting to note that where a total irrigation of 28 inches of water was given in four applications the highest yield per acre was accompanied by the highest yield per acre-foot of water, which showed conclusively that this was the most practical method presented for the irrigation of the wheat crop. The lowest yield per acre-foot of water was obtained with 35 inches of water in five 7-inch applications.

Results with Two Irrigations

Where only two irrigations were possible the two 9-inch applications, one before and one after heading, gave the largest yield, 31 bushels per

acre, or 10 per cent less than the highest yield with 28 inches of water in four applications. Apparently a 12-inch irrigation before heading provided more water than the crop utilized to the best advantage. The maximum yield with two irrigations was obtained with a total of 18 inches of water applied when the crop turned dark-green in color. With a total irrigation of less than 18 inches the yield was considerably decreased; whereas a total irrigation of 24 inches in two 12-inch applications produced an average of 28.2 bushels per acre or about 10 per cent less than where two 9-inch applications were used.

Yield per Acre-Foot of Water with Two Irrigations

The highest yield of 27.4 bushels per acre-foot of water was obtained with the smallest total irrigation of 12 inches, and the lowest yield 14.1 bushels with the largest total irrigation of 24 inches. The second highest yield of 20.7 bushels per acre-foot of water was produced with the two 9-inch applications, which indicates that this is the most practical method presented to irrigate wheat when only two applications were given.

With only two irrigations the yields were generally lower throughout than with a greater number of applications using the same total amount of water. It is, therefore, recommended that only in cases of water shortage is it advisable to use only two irrigations, for with three or four applications our tests show that the yields of grain are generally much higher. It should be noted, however, that where only two irrigations are possible, a profitable crop of wheat can be grown.

Influence of Precipitation on Amount of Water Required

In many States where irrigation is practiced the annual precipitation is an important factor to be considered in the results of investigation on irrigation methods, and particularly in the duty of water in field practice. The following table gives the total precipitation and monthly distribution for the past four years and for a period of twenty-eight years at the Experiment Station:

MONTHLY PRECIPITATION IN INCHES AT THE NEVADA AGRICULTURAL EXPERIMENT STATION, FOUR-YEAR PERIOD, 1914-1917*

Month	1914	1915	1916	1917	Average	Average from 1889-1917
January	5.46	0.55	6.76	0.05	3.20	2
February	0.88	2.59	0.59	2.01	1.51	1
March	Trace	0.16	0.33	.74	.31	
April	0.70	0.33	0.11	.28	.35	
May	0.11	0.52	Trace	1.18	.45	
June	0.29	0.00	0.11	.06	.11	
July	Trace	0.04	Trace	.04	.02	
August	0.32	Trace	0.04	.12	.13	
September	0.05	0.06	0.35	Trace	.11	
October	0.16	Trace	1.13	Trace	.32	
November	Trace	0.23	0.05	.68	.25	
December	0.70	1.09	0.97	.27	.76	1
Totals	8.71	5.62	10.44	5.43	7.52	8

*Information secured from the U. S. Weather Bureau, Reno, Nevada.

It will be seen from the above table that the average annual precipitation for the four-year period of the irrigation investigations amounted to 7.52 inches. In the month of May, 1917, 1.18 inches of rain were

received. With this exception, during no one month of the growing season throughout this period was sufficient rainfall received to affect the moisture content; that is, the small amount of precipitation at any one time was subject to evaporation within a few hours which followed. The results of these experiments are therefore based almost entirely on the water applied by irrigation.

PROJECT 2—VARIETY TESTING AND CROP IMPROVEMENT

These experiments included row tests and also plat tests of several important varieties of wheat, oats, barley, forage and root crops, the object being to determine the varieties of these crops which show special adaptation to the local conditions by their hardiness and yielding capacity, and to improve these varieties by selection. By testing out these varieties in various parts of the State where the altitude and climatic conditions are difficult, it will be possible to determine the highest producing varieties of cereals and forage crops for all agricultural districts of the State.

Cereals

The experiment with varieties of wheat, oats, and barley, included 17 varieties of wheat, 18 of oats, and 17 of barley. Each variety was represented by one row 100 feet long. The seed was planted about one and one-half inches deep in rows one foot apart. The results of the fifteen highest producing varieties were as follows:

RESULTS WITH WHEAT

Variety	Yield per acre of grain—Pounds				
	1914	1915	1916	1917	Average
1. Gaias Five C.I. 2396		4,492	3,471	2,821	3,592
2. New Zealand		2,996	4,097	3,040	3,378
3. Colorado No. 50	2,730	3,625	3,452	2,821	3,157
4. DuRoi		3,023	3,857	2,580	3,153
5. Rieti				3,100	3,100
6. White Club	3,294	3,096	3,856	1,912	3,039
7. Festus C.I. 1596		2,534	3,304	3,262	3,033
8. Chul	3,222	3,145	2,879	2,858	3,025
9. Blue Stem	3,318	2,855	3,856	1,888	2,979
10. Marquis	2,808	3,505	2,979	2,603	2,970
11. Stanley White	2,724	2,667	2,554	3,185	2,783
12. Minnesota Fife	2,100	3,643	2,978	2,212	2,733
13. White Australian	816	3,299	4,062	2,713	2,720
14. Glyndon No. 692		2,274	3,935	1,937	2,715
15. Minnesota No. 163		2,692	3,365	2,071	2,709

Of the varieties used for four years, Colorado No. 50 was the highest producer with 3,157 pounds per acre. The next four highest yielding varieties in the order named were White Club, Chul, Blue Stem, and Marquis, the greatest difference in yield being 69 pounds. Marquis yielded 187 pounds per acre less than the highest producing variety. Likewise with the next three varieties, including Stanley White, Minnesota Fife and White Australian, 63 pounds is the largest variation in yield.

Marquis and Blue Stem varieties produced a high quality of wheat for milling purposes, and command an excellent market at the local mills. This superiority in quality of grain more than offsets the difference in yield between them and the three highest producers. Of the

varieties tested during the last three years, Galgalos Fife was the highest producer, yielding 3,592 pounds per acre.

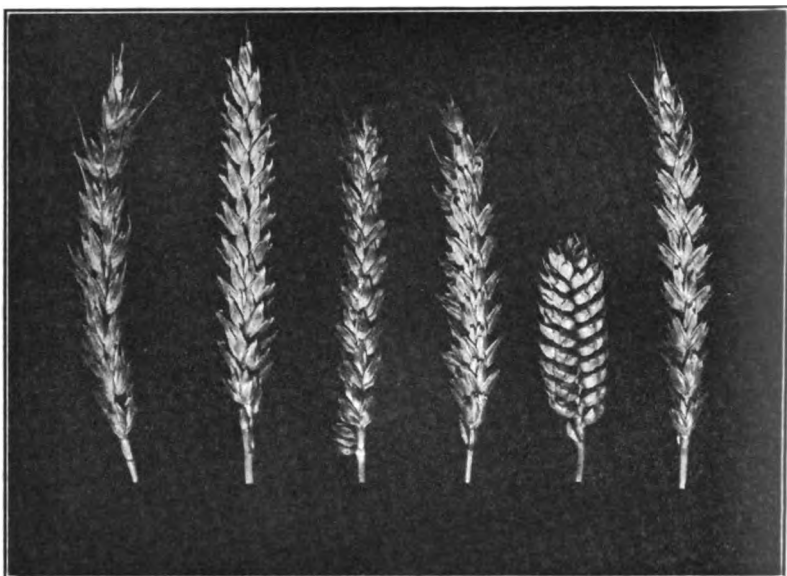


Figure 3. High-Producing Wheat Varieties at the Nevada Station.

From left to right:

- | | | |
|---------------------------|------------------------|----------------------|
| 1. Colorado No. 50 (Wyo.) | 3. Blue Stem (Wash.) | 5. White Club (Utah) |
| 2. Defiance (Colo.) | 4. New Zealand (Colo.) | 6. Marquis (Nevada) |

RESULTS WITH OATS

Variety	Yield per acre of grain—Pounds				
	1914	1915	1916	1917	Average
1. Early Mountain No. 2 C.I. 656		2,185	3,042	3,301	2.8
2. Early Mountain No. 754		2,041	2,187	2,380	2.2
3. Black American C.I. 549		1,844	1,937	2,694	2.1
4. Siberian C.I. 741		2,054	1,222	3,018	2.0
5. Banner C.I. 751		1,922	1,853	1,965	1.9
6. White Danish		2,011	1,808	2,135	1.8
7. Danish	1,124	1,678	1,494	2,190	1.7
8. Big Four	813	1,895	1,614	2,524	1.2
9. Garton No. 572	663	2,223	1,340	2,492	1.6
10. Ontario Ag. Col. No. 72		1,847	1,035	1,893	1.5
11. Colorado Black	640	1,975	1,412	2,338	1.5
12. Siberian	788	2,064	1,441	1,573	1.4
13. Wisconsin Ped. No. 1	1,080	1,950	1,161	1,635	1.4
14. Kherson	1,425	1,658	994	1,523	1.4
15. Abundance	692	1,656	982	1,860	1.3

*Average of checks.

Of the varieties tested for three years, Early Mountain was the highest producer with 2,843 pounds or 88.8 bushels per acre, which is bushels greater than any other variety. This variety was affected less than any other by shattering of the seed due to blasting of the panicle before the grain had ripened. With many of these varieties considerable grain had shattered before the plants were ready for harvest.

RESULTS WITH BARLEY

Variety	Yield per acre of grain—Pounds				
	1914	1915	1916	1917	Average
1. Swedish Gold			4,763	4,879	4,821
2. Washington Brewing		3,125	3,823	1,846	3,965
3. Trebi C.I. 986		2,197	3,896	2,813	2,965
4. California Feed		2,814	3,975	2,547	2,928
5. White Smayna	2,367	2,522	4,667	2,040	2,908
6. Chevalier	2,395	2,720	3,625	2,595	2,900
7. Heils Hanna No. 682	2,720	1,550	4,166	2,791	2,883
8. C.I. No. 679, France	3,023	3,260	4,924	1,773	2,857
9. Oregon No. 19785	1,469	2,784	4,314	2,766	2,820
10. Moravian 2-rowed	1,465	2,602	3,294	2,876	2,815
11. Princess	3,086	2,012	4,352	2,039	2,801
12. Peda C.I. No. 682		1,123	3,141	4,063	2,792
13. Blue Ribbon 2-rowed		3,040	3,448	4,025	2,731
14. Hanna 2-rowed		3,040	3,448	4,025	2,731
15. White Moravian		1,618	3,340	3,891	2,771
		3,315	1,661	2,522	2,708

Of the varieties tested for four years, California Feed barley was the highest producer with 2,926 pounds per acre. In 1916 a new variety of two-rowed barley called Swedish Gold, obtained from Sweden, was included in this test and the average yield for the past two years was 4,821 pounds per acre. This variety is a rank grower, producing an exceptionally heavy yield of straw. If the high yielding power is maintained in the field tests, this will be a very valuable variety of barley for Nevada.

Forage Crops—Including Root Crops

RESULTS WITH ALFALFA

Variety	Leaves—Per cent of plant		Yield per acre—Tons		
	First crop	Second crop	First crop	Second crop	Total
1. Australia 23753	34.6	33.3	3.26	2.68	6.04
2. France 24923	42.1	39.1	3.15	2.61	5.76
3. North Dakota 27247	33.3	38.7	2.72	2.68	5.40
4. Baltic	38.0	38.0	2.75	2.34	5.09
5. Nevada 38	37.1	39.0	2.53	2.51	5.04
6. Grimm	41.4	38.3	2.38	2.19	4.57

First crop harvested July 2, 1917. Second crop harvested August 21, 1917.

The alfalfa varieties were planted with a nurse crop of Chevalier barley in April, 1916, in plats of about one-tenth acre. The first hay crop was produced in 1917 as recorded above. In this test Australia No. 23,753 was the highest producer with 6.04 tons per acre. Grimm made the lowest yield of 4.57 tons per acre. With the highest producer, the crop contained an average of 34 per cent of leaves to stems, North Dakota No. 27,247 contained 36 per cent, while the other varieties averaged 39 per cent of leaves to stems. With the first crop, the variation in proportion of leaves to stems was greater than with the second crop. The third crop did not make sufficient growth to be cut for hay and was used for pasture.

CORN AND SUNFLOWER FOR ENSILAGE, 1917

Variety	Date of planting	Height at harvest	Yield per acre of forage
Improved Leaning corn	May 21	84 inches	28,422 pounds
Russian sunflower	May 21	96 inches	46,240 pounds

In this test a comparison was made of the yielding power and value of corn and Russian sunflower for silage purposes. The Russian sunflower produced by far the greatest yield of 46,240 pounds or 23.1 tons per acre. This crop also reached the proper stage of maturity to make the best quality of silage, a condition which was not true with corn in the experiment. Two small silos were installed to test the feeding value of the sunflower ensilage. No feeding experiment is being conducted with any of these silage crops.

The Russian sunflower is especially well adapted to Nevada conditions and produces a very heavy yield of silage. This is a single-stalked variety which develops a large head about seven inches in diameter



Figure 4. A 23-ton crop of Russian sunflower grown for silage on the Station Farm.

The seed is planted about two inches deep in a similar manner to corn between the middle of May and the first of June in rows about three feet apart and from four to eight inches apart in the row. When grown for seed about 12 inches should be left between plants in the row. The crop is irrigated and cultivated like corn, and is harvested for ensilage when the seeds have developed to the late milk stage, but before they have been taken by the birds. Where birds are troublesome, the crop should be cut when in the early milk stage and placed in the silo.

small area of this crop may be cut successfully in a comparatively short time with the ordinary corn knife or sharp hoe with a short handle. In harvesting large areas the corn harvester will be found effective.

The sunflower is ready for harvest by the first of September and thus can be cut green and placed in the silo before any injury is caused by a killing frost. In this respect it excels corn for ensilage, as corn is sometimes seriously injured by a killing frost before it has reached the proper stage of development for silage. The corn grown at the Experiment Station reaches the proper stage of maturity about the middle of September.

After harvesting, the sunflower was cut into pieces about three-fourths of an inch long with an ensilage cutter and placed in the silo. Later it was fed in connection with alfalfa hay and rolled barley to the University dairy herd with excellent results. The coarse stems and heads, including the seed, went through the proper stages of fermentation and worked up into a mealy succulent pulp which was very palatable and was entirely consumed by the stock.

Sudan Grass for Forage and Seed

The results of the tests at the Experiment Station show that Sudan grass will produce a greater average yield of forage or seed than the millets or field peas. When planted in rows and given continuous cultivation, the crop withstands considerable drought. The planting must be delayed until the danger of late spring killing frosts has passed. At the Experiment Station the practice has been to sow from the 15th to the 25th of May. If the crop is to be grown for forage, the seed may be broadcasted or sown with a grain drill not over one and one-half inches deep at the rate of about 20 pounds per acre.

Sudan grass produced about 8 tons of silage per acre at the Experiment Station in 1917. When grown for this purpose the crop is best cut when the seeds have reached the milk stage, generally during the latter part of August. The crop is harvested like alfalfa, run through an ensilage cutter and placed in the silo. The silage is highly relished by dairy cattle and makes a very desirable combination with alfalfa hay, as it is relatively low in protein and well supplied with carbohydrates. Sudan grass should be used for pasture with considerable caution on account of the danger of poison to stock from the prussic acid contained in the immature plant.

The average results for the three-year period 1915-1917 show a yield of 1,218 pounds of Sudan grass seed per acre. When grown for seed the crop is planted in rows from 30 to 36 inches apart, cultivated frequently and harvested when the first heads are fully ripe. Further ripening will result in considerable loss of seed from shattering.

RESULTS WITH POTATOES

Variety	Yield per acre—Pounds					
	1913	1914	1915	1916	1917	Average
Great Divide.....	21,700	13,025	6,169	7,750	19,066	13,546
Burbank.....	16,520	10,027	8,096	5,981	24,379	12,991
Peerless.....	18,460	6,152	6,438	6,516	21,344	11,782
Early Sunset.....	19,220	3,562	7,827	4,579	13,887	9,715
Netted Gem.....				6,440	11,750	9,095
Early Red.....	12,160	4,222	5,979	3,964	14,232	8,109

Of the varieties that have been included in this test for the last five years Great Divide, Burbank, and Peerless were the heaviest producers in the order named. These three varieties have been grown in Nevada for many years and the results indicate the value of well-selected home-grown seed over that introduced from other States.

A small amount of seed was grown in 1917 of each of nine leading varieties of potatoes which are being tested in different Western States under irrigation, the object being to obtain a sufficient amount of seed for a comparative test of these varieties in 1918 with our present high producers. Included in this list are Producer, White Rose, American Wonder, Pride of Multnomah, Earliest Fall, Snow (California), Early Prize-Taker, Scotch Rose, and Snow (Oregon).

RESULTS WITH BEETS

Variety	Yield per acre—Pounds				
	1914	1915	1916	1917	Average
Our Ideal mangel	16,616	17,669	60,096	27,497	30,469
Sugar-beet (local)		12,466	41,770	23,485	25,907
Mammoth Long Red mangel	14,994	18,155	54,856	18,861	25,464
Golden Tankard mangel	17,172	13,898	48,751	15,751	23,881
Giant Feeding mangel	12,929	20,975	43,065	18,384	23,835
Sugar-beet (foreign seed)	16,275	14,606	41,595	21,269	23,661

The average results of this experiment for the past four years show that "Our Ideal" mangel was the greatest producer. However, the feeding value per acre is considerably less than that of the sugar-beet on account of the high sugar content of the latter. The Dairy Department fed the beets from this test to the cows and considered the mangels only half as valuable as the sugar-beets for this purpose. The variety "Our Ideal" mangel shows a considerable increase in yield and sugar content over the "Mammoth Long Red" mangel. The varieties of "Giant Feeding" and "Golden Tankard" mangels which represent the half sugar-beet are of less value per acre than "Our Ideal" mangel or the sugar-beet on account of the low yield as compared with "Our Ideal," and low sugar content as compared with the sugar-beet.

Date of Planting Sugar-Beets

Since the establishment of the sugar-beet factory at Fallon many requests have been received for information on the comparative yield of early- and late-planted sugar-beets. The following table gives the results of tests for two years including 1913 and 1917:

Date of planting	Yield per acre—Pounds		
	1913	1917	Average
April 23	41,580	24,000	32,790
April 30	40,700	24,250	32,475
May 7	34,430	17,029	25,730
May 14	32,340	15,000	23,670
May 21	26,850	15,591	21,221
May 28	29,320	15,250	22,585
June 4	25,080	9,211	17,145
June 11	22,000	10,081	16,041
June 17	19,800	10,810	15,300

In these results it will be noted that the yields for 1917 were considerably lower than those of 1913. The chief reason for this variation was that in 1917 the beets were grown on an inferior soil. This soil, however, was quite uniform in texture and the results are equally important on the basis of comparison. The average results for the two years indicate that the greatest yields are possible when the planting occurs before the first of May. Very little difference is noted in the average results when the planting occurred during the first half and the latter half of the month of May. The greatest average production of 16.4 tons per acre was obtained with the early planting on April 23. These results indicate the importance of having all beets planted before the first of June, since after that date an average decrease in yield from 11.26 tons to 8.60 tons per acre occurred, the latter yield representing beets planted on June 4.

RESULTS OF CEREAL VARIETIES IN PLATS

Variety	Yield per acre—Pounds		
	1916	1917	Average
<i>Wheat—</i>			
White Club.....	3,381	1,961	2,641
Blue Stem.....	2,738	2,010	2,374
Minnesota No. 168.....	2,496	1,932	2,214
<i>Oats—</i>			
Great Dakota.....	1,125	948	1,037
Wisconsin Fed. No. 1.....	884	357	621
Kharson.....	504	171	338
<i>Barley—</i>			
Chevalier.....	2,868	1,311	2,135
Macraian.....	2,720	1,239	2,006

It will be noted in these results that the yield of oats in 1917 was especially low. The lack of humidity, together with the intense heat of the sun during the ripening period, caused the oat panicles to blast and turn white before the grain was fully developed and while the culms and leaves were still green. This caused a large portion of the oats to shatter to the ground before and during harvest.

These varieties of cereals were among the highest producers during preceding seasons in the row variety test. The White Club wheat was the highest producer with this cereal, while but little variation in yield occurred with the two varieties of barley in this test.

Cooperative Variety Tests

Variety tests of wheat and barley were conducted for the last three years on the Truckee-Carson Project in cooperation with F. B. Headley, Superintendent of the United States Experiment Farm at Fallon. The following tables give the results of this experiment for 1917:

VARIETY TEST OF WHEAT

Variety	Yield per acre—Pounds	Estimated yield per acre of local variety on same plat—Pounds
Little Club.....	1,725	1,630
Rieti.....	1,778	1,809
Blue Stem.....	2,180	2,120
Defiance.....	2,240	2,338
Marquis.....	2,657	2,513
Sonora.....	3,062	2,930
Dicklow.....	3,066	3,000
Ghirka.....	2,552	2,868

In reporting on these results Mr. Headley states: "The variation of soil was so great that an idea of the relative values of the varieties could be obtained only by comparing the yield of the nearest check plot. The mean yield of all the checks is not taken into consideration. The results show that Little Club, Marquis and Sonora are highest yielding varieties, Blue Stem, Dicklow and Rieti about equal to the 'local,' and Defiance and Ghirka are the poorest."

VARIETY TEST OF BARLEY

Variety	Yield per acre—Pounds	Estimated yield per acre of local variety on same plot—Pounds
Beldi.....	1,135	
Hulless.....	510	1.0
Chevalier.....	833	1.0
Hannchen.....	1,040	1.0
Svanhals.....	842	1.0
Coast.....	979	1.0

The relative merits of the different varieties of barley were calculated in the same manner as the wheat varieties. Beldi barley outyielded the local variety, while the other varieties were lower in production. Hannchen and Coast were about equal to the local, while Hulless was 50 per cent lower in yield.

Recommendations for Future Projects

The present season will conclude the five-year investigations on the two Agronomy Projects. It is recommended that Project 1 on Irrigation Investigations be continued in a modified form in the Humboldt River Basin in cooperation with Irrigation Investigations, Office of Public Roads, United States Department of Agriculture, through their representative, F. L. Bixby.

Over 50 per cent of the irrigated area in Nevada receives its water from the Humboldt River. Considerable of the irrigated area in the Humboldt River Basin is confined to the production of wild-hay grass. In the irrigation of this grass-hay land excessive amounts of water are used, accompanied by low yields of hay of relatively low feeding value. One of the most important agricultural problems of the State is to increase the production of hay for winter feeding of live stock and to supplement the pasture on the ranges, many of which are at present in a very depleted condition.

In cooperation with F. L. Bixby the following outline of cooperative irrigation investigations in Nevada was prepared and submitted in person at Berkeley, California, by Dean Knight and Mr. Bixby to Dr. Samuel Fortier, Chief of Irrigation Investigations, Office of Public Roads, United States Department of Agriculture:

Subject: **Cooperative Irrigation Investigations in Nevada**

This project consists of an economic study of the use of water in connection with the growing of meadow grasses, alfalfa and other forage crops, comparing present wasteful methods of distribution and application of water with more conservative methods and consequent larger crop returns.

Purpose of the investigation:

The purpose of the investigation is to obtain data which will be of value to farmers and stockmen located more particularly in the Humboldt River Basin. In this section of the State there are large areas of land growing native grasses for stock-feeding purposes. Most of this area is irrigated by the wild flooding method with little or no direction or attention. The result has been the production of an inferior crop and a raising of the water table to such an extent as to produce excessive alkali conditions in many places. By the introduction of forage crops of higher feeding values and the cutting down of the wasteful use of water, greater crop returns will be obtained; thus supplementing the depleted ranges, and relieving the water-logged condition of the soil.

Data to be obtained:

1—Area of crop irrigated; 2—Most economic head of water to use; 3—Number of irrigations necessary; 4—Economic depth of each irrigation (inches); 5—Total amount of irrigation water applied (acre-feet); 6—Total amount of waste water (acre-feet); 7—Net duty of water; 8—Evaporation from free water surface; 9—Temperature records; 10—Yield of forage per acre; 11—Yield of forage per acre per acre-foot of water applied; 12—Quality of forage as to its nutrient value; 13—Mechanical soil analyses.

Points to be investigated and results to be obtained:

1. Large heads versus small heads of water for economic application as to cost, including time and labor; and also as to best results in uniform application as shown by soil moisture determinations.

2. Best methods of distribution of irrigation water.

3. Depth to water table at various intervals during the irrigation season and relation of the amounts of water applied to the rise of the ground water.

4. Relation of the height of the ground water table to the soil moisture content.

5. Variation of salt content of soil at different depths throughout the period of the investigation.

6. Importance of the investigation to:

a. Livestock industry;

b. Greater production of hay to supplement the already depleted ranges;

c. Adjudication of water rights;

d. Hastening of the introduction of more profitable forage crops.

Plan of work:

The plan will be to select typical areas on the Humboldt River, measuring water on present native grasses according to present methods and also according to more approved methods for the purpose of comparison. The introduction of new forage crops including the native grasses and clovers, and various annuals; determining the duty of water for each variety.

Rather than have the work scattered over wide distances it is proposed to concentrate the field work in the vicinity of Deeth where water conditions are most favorable. Soil and climatic conditions in this vicinity are representative of the whole Humboldt River Valley and cooperation can be more readily obtained.

At the conference at Berkeley the following memorandum was prepared regarding cooperative irrigation and drainage work in Nevada:

**Memorandum Regarding Cooperative Irrigation and Drainage
Work in Nevada**

It is mutually understood that the Director of the Bureau of Public Roads, United States Department of Agriculture, and the Director of the Nevada Experiment Station will cooperate in irrigation and drainage work in Nevada on the following terms:

1. The period covered by this memorandum shall extend from July 1, 1918, to June 30, 1919.

2. The work to be done under this agreement shall be under the immediate

direction of the chief of the irrigation division of the Bureau of Public Roads, and the Dean of the College of Agriculture of the University of Nevada.

3. The work to be done under this agreement shall cover the following lines:
 - a. Completion of duty of water experiments in progress at the Nevada Experiment Station during the season of 1918.
 - b. Completion of duty of water studies in progress in Muddy River Valley during the season of 1918.
 - c. Improvement in methods of irrigating wild hay meadows in Humboldt River Valley to be begun in the spring of 1919.
 - d. Drainage of alkali, irrigated and water-logged lands.
 - e. Improvement of irrigation and drainage conditions throughout the Humboldt River Valley.
 - f. Emergency work in irrigation and drainage, including pumping.
4. It is mutually understood that each party to this understanding will contribute to the expense of the work provided for, the sum of \$5,000.
5. Complete reports of the work done under this memorandum shall be supplied to both parties to this understanding and either party may publish such results on condition that proper credit is given for the cooperative character of the work.

REPORT OF DEPARTMENT OF VETERINARY SCIENCE

By EDWARD RECORDS

During the past year four projects have been actively conducted under the Adams Fund:

Project 15—Equine Anemia.

Project 16—A Hemorrhagic Disease Among Cattle.

Project 17—Hog-Cholera Serum Purification.

Project 18—Contagious Epithelioma in Chickens.

Project 21, "Separation of the Active Principles of Anti-Anthrax Serum," was definitely discontinued following the quarterly report rendered under date of December 30, 1917. The basis for this action was the fact that other investigators had quite thoroughly covered the field we had in mind and published their results. It also became apparent on more careful scrutiny of the problem that it was one pertaining more to human medicine and it was thought undesirable to continue it as an Experiment Station project, especially in view of the more urgent work at hand under the projects strictly pertinent to our local problems in animal disease.

PROJECT 15—EQUINE ANEMIA

During the past year work under this project which has been quiescent for several years was resumed and carried on with a fair amount of success. The circumstance which primarily rendered this possible was the discovery of a few cases of the disease of a fairly acute type in the western part of the State where good facilities were available for their study. With the virus obtained from this source the disease was conclusively reproduced under well-controlled conditions, using healthy horses in surroundings where the possibility of natural infection could be excluded. This was something which had not been satisfactorily done in all the previous work under this project. After the second animal passage under these conditions the virus appeared to lose its pathogenicity to a large extent, but in the meantime additional valuable information was obtained by apparently reproducing the disease with serum which had been passed through a Berkefeld filter, thereby demonstrating that the disease we had been working with in Nevada was in this respect analogous to that which has received such extensive investigation in Europe.

It is true the animals referred to above as developing the disease from inoculation with Berkefeld filtrates have not died nor developed a malignant type of the disease, but other horses inoculated with whole blood from the same source at the same time have not done so either, so that the mild type of the disease produced by the filtrates is presumably due to a natural attenuation of the virus strain and not the fact of filtration.

Owing to the fact that the strain of virus referred to above lost its virulence late in 1917 and that there was no qualified man on the staff

who had the time to devote to the work on this project, it again became inactive at that time, the inoculated horses on hand being merely kept under fairly close observation as to general condition and temperature curve up to May, 1, 1918, at which time Dr. Wright joined the staff and has since made fairly extensive observations on these animals in the way of blood examinations, etc., with a view of determining their actual condition and forming some opinion as to the prospect of their yielding further information of value. This seems doubtful at the present time, and they will probably be discarded in the near future.

A recent survey of conditions in the eastern part of the State where this disease was so prevalent at one time, but apparently nearly died out during the last few years, seems to show quite conclusively that it has become active there again, causing severe losses in the late summer of 1917. This fact having been determined, we are proceeding on the assumption that a like condition will develop during the ensuing summer and making preparations to actively prosecute work under this project, this being made possible through the addition to the staff of Dr. Lewis H. Wright, who will devote the major portion of his time for at least the next year to work on this disease.

Present plans call for the following major lines of procedure :

1. The treatment of naturally occurring cases whenever suitable ones can be found, trying out various procedures along the line of chemotherapy, as this appears to be the only line of treatment offering any prospect of success, the biologic therapeutics of this and analogous diseases having so far failed to yield any promising results.

2. A thorough study of the epizootiology of the disease with special reference to the mode of transmission under natural conditions, laying particular stress on the possibility of its being transmitted by the biting-flies, this being considered well within the bounds of possibility inasmuch as the season of its greatest prevalence coincides fairly well with the season of the year when these insects are most active, namely, late summer and early fall, it seeming possible that the cases occurring later than this may have received their infection during that time and only manifested noticeable symptoms later in the season, being possessed of sufficient natural resistance to maintain apparent good health until that time.

3. In addition to the two main points of attack above, the work on transmission by filtrates will be repeated and fairly extensive experiments carried out to confirm the impossibility of transmitting the disease to other domestic and laboratory animals, a point which does not appear to have been very carefully followed out, at least with reference to the disease as it occurs in the United States. Other points which may arise in connection with natural cases or the studies of the disease under laboratory conditions will receive as much attention as the demands on our time and other resources will permit.

PROJECT 16—A HEMORRHAGIC DISEASE AMONG CATTLE

A great volume of work has been done under this project, the results of which have been in some ways very encouraging, but in others quite disappointing.

Researches into the actual cause of this condition, conducted largely

on the supposition that it was an atypical form of hemorrhagic septicemia due to an infection with the *B. bovisepiticum*, have continued to yield nothing which would strengthen this belief. Serological tests upon blood serum drawn from naturally occurring cases, testing same against preparations of *B. bovisepiticum*, yielded nothing in the way of definite reactions. Cultural examination of blood samples drawn from the living animal in the same cases proved bacteriologically negative.

In a few selected autopsies where the material was secured in excellent condition a large anaerobic organism was isolated from the liver lesion typical of the disease. So far, inoculation tests by various methods on bovines have failed to indicate that this organism is pathogenic for these animals. In a few instances it proved highly pathogenic for guinea pigs, at other times not, and rabbit inoculations always proved negative.

In spite of the above facts, the extensive vaccination work carried out in cooperation with the State Board of Stock Commissioners, principally in the Carson Valley, using for this purpose vaccines prepared from *B. bovisepiticum*, appears to have greatly reduced the number of cases occurring in this district where the disease has always been most prevalent. This reduction in the number of cases has been so apparent as to be self-evident to the stock owners, who are more and more anxious to have this work done.

The treatment of individual cases by the administration of anti-hemorrhagic septicemia serum prepared by us has also yielded wonderfully good results. The percentage of recoveries throughout the whole series of cases treated, taking the cases just as they came without selection, has been about 60 per cent, in marked contrast to the death rate without the use of this serum which was well in excess of 90 per cent. Whether or not this is due to a specific action by this serum, it is too early to say, but there seems some possibility that it is a purely non-specific effect—this opinion being strengthened by the fact that the results obtained from its administration do not vary in proportion to the potency of the serum as determined by laboratory tests on rabbits, a very low potency serum apparently giving as good results in the treatment of naturally occurring cases as one carrying a high antibody content.

During the past year two papers treating of the work under this project have been prepared. The first, "Studies of an Obscure Cattle Disease in Western Nevada," dealt largely with the attempts at the definite diagnosis of this condition and was presented at the fifty-fourth annual meeting of the American Veterinary Medical Association at Kansas City, Missouri, in August, 1917, where it was well received and called forth a large amount of interesting discussion. This paper has since been published in the Journal of the American Veterinary Medical Association, Vol. 5, No. 2, November, 1917. The second, a shorter paper entitled "The Serum Treatment of Hemorrhagic Septicemia," dealing entirely with the results obtained from the administration of the serum referred to above for curative purposes and giving a description of the technique adopted for this purpose, was presented at the Practitioners' Short Course in Veterinary Medicine, University of California, Davis, Calif., in December, 1917. This

also met with a good reception and brought forth a great deal of interesting discussion and relation of experiences by the large number of California veterinarians present, as this disease is also fairly prevalent in parts of that State. This paper has also now appeared in the Journal of the American Veterinary Medical Association, Vol. 5, No. 7 March, 1918.

During the last few months we have succeeded in accumulating a large stock of serum for curative purposes which will enable us to carry on this work extensively when the disease again becomes active this summer, and during the present spring vaccination work has also been pushed successfully in the localities where the most losses from this disease were to be anticipated, the expense of the routine field work in this connection being borne by the State Board of Stock Commissioners, leaving the Experiment Station only to supply the biologicals needed.

From now on the disease may be expected to manifest its usual summer activity, and in addition to its control by serum administration it is planned to renew our efforts looking toward the definite determination of the etiology of this condition. To facilitate this work a supply of young cattle has been procured, so that inoculation experiments can be made immediately when material becomes available, thereby obviating the possibility of same becoming artificially attenuated while subjects are being procured for inoculation purposes. In this work, for the present at least, stress will continue to be laid upon the role played by the anaerobic organisms in the liver lesions, as it is considered these are probably of at least some significance, being the only organisms uniformly present. As this work is carried on, of course other points of attack may present themselves, in which event they will be vigorously prosecuted.

PROJECT 17—HOG-CHOLERA SERUM PURIFICATION

Considerable work has been done under this project, a large amount of raw blood having been processed in separate lots, the technique being varied more or less in each. The results may be summarized as follows:

1. Practically all the antibodies in the Dorset-Niles-McBride hog-cholera serum can be precipitated from the clear plasma by 60 per cent saturation with ammonium sulphate.

2. This wide fraction is necessarily quite bulky, but will dissolve readily in distilled water, the finished solution equaling one-half the volume of original blood.

3. Paper and asbestos filtration of this solution is slow but feasible. Berkefeld filtration has so far proved impossible on a practical scale, but appears unnecessary, as, probably owing to the high ammonium sulphate content, the final solution is self-sterilizing, though no precautions to avoid contamination are taken during processing.

4. The ammonium sulphate used during processing can be removed by dialysis, but such a procedure is not essential, as no noticeable ill effects are observed following the administration of the product undialyzed.

5. The process is scientifically sound, but shows no prospect of com-

ing into practical use, as the expense would be prohibitive except perhaps in the case of concentrating low potency serums instead of discarding the same.

The actual work on this project has been completed except for the potency test on the last lot of globulin solution, which has been delayed owing to difficulties encountered in securing suitable virus for the purpose. As soon as this is accomplished, the work will be written up and the results published in some technical journal, this seeming most desirable, as the subject has no value for a popular bulletin.

PROJECT 18—CONTAGIOUS EPITHELIOMA IN CHICKENS

No spectacular outbreaks of the disease such as prompted the initiation of the project have been brought to our notice during the past year, but considerable interesting material has become available which has been handled to the best advantage possible.

The study of the various affected birds submitted for examination seems to show quite clearly that we encounter, at least in this district, three really distinct conditions as to etiology which present a clinical picture hard to distinguish. These may be summarized as follows:

1. The true contagious epithelioma due to the "scab virus" infection which attacks the skin and all the mucous membranes of the head, the lesions in the latter location being aggravated by secondary infection with many extraneous micro-organisms. This type is highly contagious and will attack vigorous birds in good surroundings. The attempts at controlling this type seem to indicate that the secondary infections referred to above are responsible for the major portion of the loss, rather than the initial infection with the specific virus. This opinion is based on the observation already noted that a "vaccine" prepared from the specific "scab" lesions alone does not give as good results in checking the losses in an actual outbreak as one containing both the specific lesions and the secondary invaders, and that in actual practice the use of a true bacterin made up from the various organisms isolated from the lesions is quite effective in preventing losses, disregarding the initial infective agent entirely.

2. A nonspecific type due to an infection with various micro-organisms. This form does not attack the skin, only the mucous membranes of the head being involved, and all attempts to transmit it artificially to healthy birds have failed. Some little understood condition of reduced vitality of the birds due to improper methods of housing and feeding, or perhaps unusual climatic conditions being essential for its appearance, the occurrence of many cases in a flock appears to be the result of a common cause rather than direct contagion.

Vaccination with the polyvalent bacterin referred to above, even without the aid of improved sanitation, appears quite effectual in controlling this type, even advanced cases recovering under such treatment.

3. A very interesting condition has been encountered in which there are found in the conjunctival sacs and suborbital sinuses, and to some extent the throat, deposits of material distinguished from the pseudo membranes found in types 1 and 2 by a chalk-white color and extremely loose or no attachment. Complete autopsy may disclose the same deposits in the pericardial sac and kidneys. If they have not been

exposed to contamination from outside sources, these lesions are found to be bacteriologically sterile, and the disease cannot be transmitted to other birds by direct inoculation. Chemical tests show this material to be rich in uric acid.

This, taken in connection with the fact that the condition only appears to occur in birds being forced for laying or growth by a highly nitrogenous or "narrow" ration, often with little exercise, seems to show the trouble to be merely a condition analagous to "gout." This is further borne out by the observation that vaccination with the bacterin referred to above has no effect and that the condition yields readily to correction in diet when a broader ration and exercise are provided.

During the year, a large number of birds showing types 1 and 2 of the disease have been vaccinated in cooperation with the State Veterinary Control Service with most gratifying results.

It is planned to continue this as a minor project for at least another year, taking advantage of such materials as come to hand and probably devoting considerable attention to it during the winter months when this group of diseases is most prevalent and work on our other projects not very active. This can be done with very little financial outlay and should yield material for several brief publications of a rather technical nature. The essential points involved in the control of this disease or group of diseases have already been well covered in our bulletins Nos. 82 and 84.

REPORT OF THE DEPARTMENT OF CHEMISTRY

By Dr. C. A. JACOBSON

It was decided to limit the work in the Chemistry Department this year to poisonous plants, and more specifically to death camas. In order that the work might be carried on to best advantage, James B. McNair, a graduate of the University of California, was engaged to assist in the chemistry of poisonous plants, beginning the first of August. Mr. McNair had already done some work with plant poisons, especially those of poison oak. He resigned January 1, 1918.

Mr. McNair's time was devoted almost exclusively to the preparation of crude alkaloids from dried poisonous plants. He also worked upon determinations of crude fiber in alfalfa samples from different cuttings. This work was still incomplete at the time of his resignation.

As was explained in last year's report, the summer of 1916 was not favorable to the growth of satisfactory death camas material, and therefore a considerable quantity was harvested last summer to provide sufficient crude alkaloid for this year's work. The material was dried, ground, and extracted, and this work continued throughout most of the year, as the process of extraction was a very slow and tedious operation.

The purpose of these investigations was to isolate and characterize the one or more alkaloids and other poisonous constituents of the plant, in order that they might be identified at any future time. It was also intended to examine these poisons from the toxicological side, in order that authentic data might be placed in the hands of sheepmen to guide them in meeting the menace of sheep poisoning by this plant.

The study of this problem has just been begun and not enough facts obtained to warrant conclusions and publication of the same elsewhere. Considerable data are, however, at hand, and it would seem best to put these in print, for the guidance of any one who decides to undertake chemical work with the plant in the future. For that reason, a short technical discussion of the matter is here presented.

The species of death camas (*Zygadenus*), with which we worked, is most nearly like *paniculatus*. It is quite different from *Zygadenus intermedius* with which Loy, Heyl, and Hepner of the Wyoming Station worked. (Bull. No. 101, Wyoming Station.)

Our species grows at an elevation of from 5,500 to 7,000 feet, and covers a wide area over the Sierra foothills to considerable distances up the mountains. Several hundred pounds of the plant were collected by pulling up the stem, leaving the bulb in the ground. The material was ground through a meat chopper and spread out to dry in the air.

The ground and dried material was extracted with 95 per cent ethyl alcohol three successive times. The alcoholic extract was then removed by pouring off and pressing the residue in the hydraulic press. The extract was then evaporated under diminished pressure till a thick syrup resulted. This syrup was poured with constant stirring into about twenty times its volume of a one-half per cent tartaric acid solu-

tion in water, then warmed gently on the water bath and stirred from time to time, and allowed to stand overnight. In the morning a reddish-brown resin had settled to the bottom of the vessel, which also adhered to the sides, leaving a clear dark-red solution above.

The solution was then evaporated in large evaporating dishes to about one-fourth the original volume. When the concentrated solution was allowed to stand one or two days, more tar or resin separated out, in which well-defined white crystals were found imbedded. At first these appeared to be a tartrate of the poisonous principle, but later were found to be potassium tartrate, and not poisonous.

The concentrated tartaric acid solution was filtered and then



Figure 5. Death Camas Plant,
Showing Bulb.

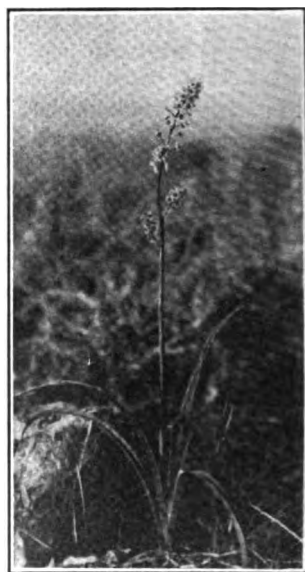


Figure 6. Death Camas Plant
Growing in Sagebrush.

extracted repeatedly with ether, to free the alkaloid tartrate from tar and resins. More than a dozen shakings in the separatory funnel were required before the ether remained colorless. The water solution was then treated with a slight excess of sodium carbonate, resulting in a yellowish-brown scum in the solution, as well as an amorphous sticky mass on the bottom and sides of the vessel.

This crude alkaloid was tested and found poisonous to rabbits. The neutralized solution, together with solid, was then shaken in a separatory funnel with ether. The ethereal solution turned yellowish, while the water solution had still a reddish tint. Four or five such extractions

with ether were made and the ethereal solutions combined and part of the ether distilled off on the water bath. If the ether were all distilled off in this way, violent effervescence would take place before all the ether is removed, and the resulting resinous mass would not be poisonous. The destruction of the poisonous principle by heating on the water bath is also true when other solvents are used, such as alcohol, chloroform, acetone, and benzene. This property therefore differs from that of the alkaloid reported by the Wyoming chemists.

When, however, the ethereal solution is removed from the water bath before effervescence begins, and is allowed to evaporate in the air at room temperature, no effervescence takes place, but a reddish sticky mass results which is poisonous to rabbits and guinea pigs.

By rendering the neutralized tartaric acid solution strongly alkaline

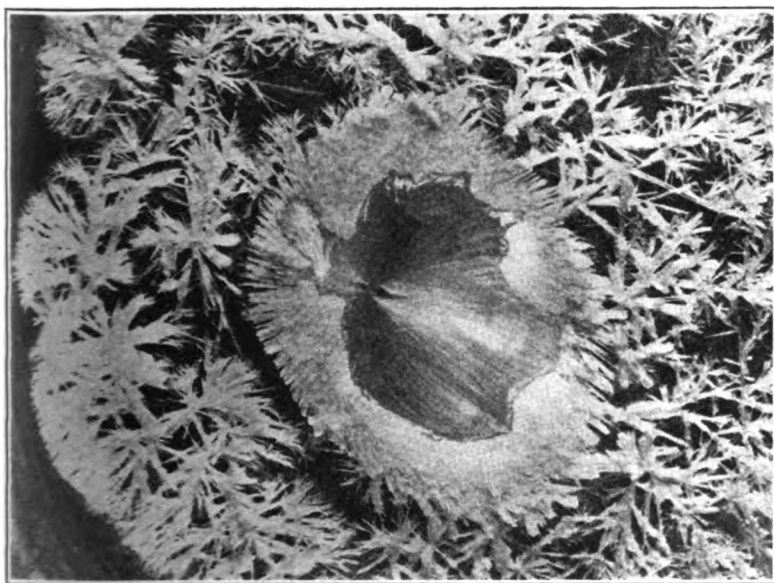


Figure 7. Crystallized Alkaloid from Death Camas.

with sodium hydroxide and further shaking with ether, an additional quantity of resinous alkaloid is obtained, which when treated as above, is also found to be poisonous to rabbits. The toxicity of this material is destroyed when heated on the water bath as previously explained. After five or six extractions with ether further extractions with chloroform were made until the chloroform remained colorless. When this solvent was partly removed by distillation, and then by spontaneous evaporation in the air, a resinous and poisonous residue resulted.

The purification of these residues from the two ether extractions and from the chloroform extraction was accomplished by taking them up in 5-per-cent solutions of tartaric acid, again shaking with ether to remove any further tar, neutralizing with sodium carbonate and sodium hydroxide, and again removing the liberated alkaloids with ether

and chloroform. This process of purification was repeated twice for each lot of alkaloid.

The toxicity of the liberated alkaloids was more pronounced after the purifications than before, and when so purified about 0.35 gram was found to be lethal for rabbits when administered per mouth. A great deal of time was consumed in attempting to get the alkaloid or alkaloids into crystalline form. It was decided, for the sake of convenience, to name this poisonous product from *Zygadenus* the Z-alkaloid, and this name is used hereafter.

The Z-alkaloid was found to be soluble in ethyl and methyl alcohol, chloroform, acetone, but much less in benzene and carbon tetrachloride. Attempts to obtain a crystalline product from all these solvents were made by varying the conditions such as time, temperature, and pressure, but all failed except in one case.

When the Z-alkaloid is allowed to stand for two or three months in the air, covered only with a watch-glass to protect from dust, it resinifies into an almost white substance, which can be pulverized well. This resinification does not affect the toxic properties nor its solubility. The material thus resinified has a melting-point between 120 and 134 degrees Centigrade. There is a gradual decomposition at this temperature with only a suggestion of melting, for bubbles of gas form throughout the material.

An apparently different product results when the resinification is allowed to proceed for more than a year under the same conditions; 8.7 grams of the material was extracted with 95 per cent alcohol at room temperature when nearly all went into solution. There remained a crystalline product insoluble in alcohol, which weighed 0.0956 gram or 1.1 per cent of the weight of the original material. This product was in the form of bundles of long needle-like crystals, soluble in water. When crystallized from water the needles arranged themselves in the form of almost perfect fans at the bottom of the vessel. The melting-point of this crystalline product was found to be 245.5°-245.8°C.

Only a very small amount of this material was obtained and therefore only 0.0358 gram could be spared for a toxicological test. This amount was injected into a rabbit intravenously, but it had no effect. The dose was doubtless too small to be effective. The accompanying plate shows the fan-shaped arrangement of the crystals. The magnification in four diameters.

The yield of the purified Z-alkaloid was found to be only about 0.3 per cent of the weight of the dried death camas plant, and therefore the yield of the crystalline product from the plant would be exceedingly small.

Another change in the Z-alkaloid on long standing may be mentioned. When a concentrated alcoholic solution of the original Z-alkaloid was poured into twenty-five times its volume of acetone only a colloidal solution resulted, and finally globules of the substance deposited on the bottom of the beaker as a very viscous liquid, while if the long resinified product is similarly treated, a flocculent amorphous precipitate settles out immediately which can be separated by filtration and washed with acetone. After drying the precipitated Z-alkaloid over concentrated

sulphuric acid, a fine cream-colored powder results, which is stable in the air.

When this precipitated Z-alkaloid was heated in the melting-point tube it began to shrink slightly at 190°C, and showed the first indications of melting at 196°C, while at 198°C melting with decomposition was pronounced.

It was learned that the above-mentioned precipitation was more satisfactory when a mixture of acetone and benzene was used in the proportion of three to one respectively. The filtered and dried Z-alkaloid from this precipitation was tested with several reagents for alkaloids, giving the following results:

Buckingham's reagent.....	Yellow, Orange, Shade 1
Erdman's reagent.....	Orange, Shade 2
Froehde's reagent.....	Yellow orange, Shade 2
Mandellieu's reagent.....	
Marquis's reagent.....	Yellow orange, Shade 2
Phosphomolybdic acid.....	No result
Phosphotungstic acid.....	White precipitate
Mercuric-potassium iodide.....	White precipitate
Iodine dissolved in KI.....	Brown precipitate
Barium potassium iodide.....	Orange precipitate
Cadmium potassium iodide.....	White precipitate
Mercuric chloride.....	No result
Tannic acid.....	White precipitate
Picric acid.....	Yellow precipitate
Auric chloride.....	Yellowish emulsion

Other reagents that will precipitate the alkaloid are lead acetate producing a heavy light-gray precipitate, and barium hydroxide yielding a light-brown precipitate which at first seems gelatinous, but settles out upon standing a day or two.

Other compounds of the Z-alkaloid which are easily made and purified are the picrate and phosphotungstate. The picrate, like nearly all of these compounds, does not have a definite melting-point. It begins to shrink at 165°C, and at 175°C turns to a thin dark-brown core in the tube, while at 182°C this core acquires a glistening surface, which looks as if it had become a viscous liquid. The phosphotungstate does not melt even when the temperature is raised to 300°C. These two salts together with the lead salt and the resinified product furnish the most hopeful means of attack for the elucidation of the structural as well as the empirical composition of the alkaloid. Manifestly, the Z-alkaloid has no similarity to zygadenine, isolated by the Wyoming chemists.

Various other compounds of the Z-alkaloid have been made, such as combinations with cholesterine, iodine, methylate, lithium hydroxide, and bismuth potassium iodide, but none are as well defined and easily handled as the ones already mentioned.

The physiological action of the poison has not been carefully studied. It is safe to say, however, that it produced at first twitchings of the head and limbs, then a comatose condition with rapid and shallow respiration, after which the animal died in a convulsion.

The toxicity of the plant has been determined at different periods of growth and found to be poisonous at all periods except when the plant has dried up in the late summer. The bulbs, stems, leaves, and flowers

have been tried separately, and all these parts of the plant found poisonous.

The toxicological determinations were always made upon the products obtained from alcoholic extractions of the plant, and not by feeding the plant or parts of the plant direct. In keeping track of the poisonous principle in the various chemical transformations of the products from this plant, thirty-seven toxicological experiments were carried out. For this work we are indebted to Dr. Records and Dr. Jakeman of the Veterinary Department of the University.

About 80 grams of the purified Z-alkaloid in liquid form, and 35 grams of the resinified product remained, besides fairly large samples of the salts mentioned, as well as a large sample of the Z-alkaloid precipitated from acetone. The preparation of this material represents a good deal of time and reagents, but it should furnish a good starting-point for the further prosecution of the problem.

The accompanying figures show the entire plant as well as the plant growing in its natural habitat.

Considerable losses to sheepmen, due to the death camas, have been recorded, but nearly always when the pasturage was scanty or following a long and exhausting drive of the herd. Scarcely any danger from this source is felt when the sheep are kept grazing under normal conditions.

REPORT OF DEPARTMENT OF RANGE MANAGEMENT

By C. E. FLEMING

Immediately after taking charge of the new Department of Range Management, I made a series of long trips over the State to find out what are the most important grazing problems. In the course of this grazing survey I covered, in a hurried and general way, practically all the livestock ranges within the State. I found that on all the ranges visited, with hardly an exception, the carrying capacity had been materially reduced by overstocking and grazing at the wrong time of the year, due to unregulated use. These trips carried me over the summer ranges and over the desert areas used almost exclusively for winter grazing of sheep; and everywhere I found the effects of a lack of legal control. Because of the absence of any guiding hand and the free help-yourself system, the grazing grounds of Nevada, its most important agricultural resource, are being rapidly depleted.

This unregulated grazing has in many places killed out all the valuable and palatable plants, leaving the range practically denuded of all forage of any economic importance. For the study of these conditions four closely related projects were established, in the Experiment Station: Project 7, Reestablishment of Native Range Forage Plants; Project 8, Relative Importance of Native Range Forage Plants; Project 9, Introduction of Foreign Range Plants, and Project 10, Carrying Capacity of the Range.

With the exception of Project 10 these projects can be studied only on controlled ranges with the assistance of especially trained practical men. At first it seemed desirable to have a large area of depleted range in eastern Nevada set aside for purely experimental purposes, either by Act of Congress or through the Interior Department. Later, conditions in the State made this inadvisable. Until such controlled areas can be secured, however, little progress can be made upon these projects. An area has recently been located, within the holdings of the Utah Construction Company, which has been wholly depleted in the past and which will afford an opportunity for establishing revegetation studies. Due to the pressure of more important projects having an immediate bearing on food production during the war, these projects excepting No. 10 have not been active this year. I recommend that all these projects be consolidated into one Hatch Fund study to be known as Revegetation of Depleted Grazing Grounds.

Project 10 has been studied actively during two seasons, 1915 and 1917. The facts collected include carrying capacity tests of the high summer sheep-grazing ranges under various methods of handling, the effect of trailing to and from an established camp upon the growth of the lamb, the effect of different methods of handling on the carrying capacity of the range, and the influence of different kinds of range on the milk supply of the ewe. These facts, with photographs and drawings, have been prepared for publication.

If time permits, we will make sheep-carrying capacity tests on the low-lying areas supporting mainly sagebrush with a scattering growth of weeds and grasses. However, on account of the war with its demands for increased production, it is very likely that no further work will be done on this project in the immediate future.

The experimental work on Project 6, Poisonous Plants, has been done under actual range conditions during the seasons of 1916 and 1917. We are now planning very active work on this project because of its important relation to the livestock industry. Important facts have been collected, upon the range conditions under which losses from poisonous plants are most likely to occur, together with data as to the best methods of handling animals to reduce such losses. So far, during the season of 1918, the work has been confined largely to feeding the recognized poisonous plants to animals in feed lots under controlled conditions to determine the amount of a plant a sheep must eat in order to be seriously or fatally poisoned.

The facts collected in the field have been put into bulletin form for immediate publication. Because most of the sheepherders in Nevada speak or write Spanish and cannot read English, a part of the bulletin has been translated into Spanish. Seven groups of poisonous plants known to cause losses on the Nevada ranges were discussed under the following headings:

1. Description of the Plant;
2. Plants with which It Is Most Commonly Confused;
3. Distribution and Habitat;
4. Seasonal Growth;
5. Animals Poisoned;
6. Symptoms;
7. Amount Necessary to Cause Death;
8. Treatment;
9. Methods of Handling Sheep to Reduce Losses.

Colored plates were made of the most important plants, with photographs of others. Black-and-white drawings and numerous photographs have been prepared as a means of giving Nevada stockmen practical information on methods of handling sheep and cattle on ranges infested with poisonous plants.

In the feeding experiments the work began with death camas. Tests have shown how much of this plant a sheep must eat in order to be seriously or fatally poisoned. It was found that with different animals the doses vary considerably. The work will have to be carried on for one more season in order to verify the conclusions reached in 1918.

Only one kind of death camas, *Zygadenus paniculatus*, the most important and abundant on the range in this vicinity, has been used. We plan, however, to feed all of the different species of *Zygadenus* that grow on the ranges in Nevada. Autopsies have been made of all animals killed, and notes and photographs were used to record all external symptoms.

Besides the work on the death camas, feeding-tests have been made with rabbit brush, western goldenrod, lupine, prickly peach, milkweed, loco, cow cabbage, and larkspur. Conclusive results have not yet been

obtained from these experiments, but before the summer of 1918 is over we expect to have gained valuable and definite information upon the poisonous properties of these plants.

In order to estimate the degree of danger that exists on the range from any of the known poisonous plants, we have determined how much grass the stomach of a sheep will hold and have made estimates of the amount of any poisonous plant which must grow on a given area of ground in order that a flock of sheep may get a deadly dose. We studied also the palatability of various poisonous plants and the extent to which they are grazed. For death camas the studies indicate at the present time that the probability of sheep becoming poisoned on the range is much less than is popularly supposed.

After an exhaustive search an area has been found for carrying on the white-sage studies under Project 20. The white sage is a typical desert plant, and as such grows where there is no drinking water available for use during the summertime. This bars all field work except when the snow is on the ground. The area selected for study is in the Pyramid Indian Reservation, approximately 60 miles northeast of Reno. A small living stream flows near-by and close to the area, so that the work with the white sage may be continued the year round.

The white sage is probably the most important form of winter grazing for the thousands of sheep which range during the winter on the unwatered desert lands of Nevada.

It grows in the driest regions, furnishing excellent forage on range that can be used only during the winter and spring because of the lack of water either in the form of living streams or wells. It is now the consensus of opinion of most stockmen who are handling stock on the range yearlong that this valuable form of feed is being exterminated, and that the carrying capacity of the ranges upon which it grows is gradually but certainly being lowered each year.

The primary object of the study of white sage is to work out a system of grazing which will improve and preserve the white-sage ranges and still permit their use. This will require a study of the life-history of the plant, with a detailed study of necessary conditions for its growth, from a grazing standpoint. From all data obtained both practical and scientific it should be possible to devise a system for using these ranges which will not only build up the plant and its associated species, but will also maintain its productivity with a minimum loss of forage through nonuse. This will necessitate (1) the study of the prevailing methods of using white-sage ranges; (2) a study of the life-history of the plant including (a) when growth commences, (b) date when fully matured, (c) manner of its reproduction; (3) date when grazing should begin, based upon the physiological requirements of the plant; (4) date when grazing should cease, and (5) severity of grazing which should be allowed; which will involve (a) the carrying capacity of the plant composition with which it is usually associated, and (b) the number of times the plant may be cropped and still keep up a healthy and vigorous growth.

At the present time there is little definite information about the use of the white-sage winter ranges. During the war it is not advisable to spend much time on this project because it will take several years to

work it out to completion and it can have little immediate bearing upon the increased production of live stock.

The range losses of sheep while down on the desert ranges during the wintertime are oftentimes enormous. These losses are mainly due to deep snows and extremely cold weather. In order to reduce these losses, a study has been made in connection with the white-sage project of supplementing the range forage by concentrates to be used during periods of emergency.

The following are a few of the most important points recorded in the use of cake on the desert:

1. Cottonseed cake should be taken to the range during November, in order to be sure and have it near the feed grounds so it may be transported in case of an emergency.

2. In feeding cake to a flock of 2,500 head of sheep or more, the band should be broken up into smaller units of 500 head so that the poor and weak sheep will have an equal chance with the stronger ones. This is a very important point in feeding sheep on the range; for losses will take place if the poor and weak sheep are not given a chance to get the cake. This they cannot do in competition with the stronger members of the flock.

3. The best times to feed cake are in the morning and at night. During the warmth of the day the sheep should be made to get out and rustle for their feed. When they are cold and the snow is deep they will buck up on the bed-ground and it is almost impossible to move them. However, if they are fed a ration of cake or corn it seems to revive them and they will move when they would not if the cake were withheld.

4. Frequently it is a very difficult thing to get them to eat the cottonseed cake, but this can be readily overcome by soaking it overnight, so that it gets into a mushy mass; they will then eat it readily.

5. When sheep are fed cottonseed cake when the snows are deep and they are forced to graze upon the more or less spiny plants, it prevents them to a large degree from contracting sore mouths. This seems to be due to the fact that it keeps the skin around the mouth from becoming chapped and hard.

6. Sheep from 3 to 6 years of age are able to stand the rigors of the desert to better advantage than either yearlings or sheep over the age of 6 years. Therefore, all gummers and broken-mouths should be kept off the desert in order to avoid losses. All bands having mixed ages should be thoroughly mouthed in the fall of the year.

7. Yearlings ceased to rustle when the snow got nine inches deep. Sheep from 3 to 6 years of age ceased to rustle when the snow had become twelve inches deep.

8. Ewes with a foundation of Merino blood were the hardiest sheep noticed on the desert. Losses from Cotswolds and blackfaces were in excess of those having a foundation of Merino blood. Thus, for successful handling of ewes on the desert ranges a foundation of Merino blood is highly important.

9. Sore mouths on the desert seem to be due to the fact that when the snow becomes deep it covers up all the fine forage such as sand grass, white and bud sage; and the sheep are forced to feed on the

more woody and spiny plants. Their mouths a and scratched until they bleed. The blood cl sheep refuse to eat and gradually fall off in fle deep snows continue.

10. It was figured that at the present prices of per pound, a sheepman can afford to pay as high tonseed cake laid down at the railroad station, range where his sheep are grazing.

11. When a band of sheep are being grazed on th being fed cake, they require approximately one her sheep and one camp tender to every two bands of are being fed cake, it requires two men to each band to haul cake to them, in all two extra men.

12. During the winter of 1916-1917 it cost from : for cake laid down at Elko. The cake was transport wagon. It cost approximately \$7 per ton to haul t The open range with no established road was too trucks. A wagon and horses made a more practical ou

13. The losses from flocks being fed cake were n account of the very mild winter last year (1918-19 opportunity to make further observations on suppleme forage with concentrates. However, at the first opport will be continued and accurate data secured as to (1, docked lambs in flocks being fed concentrates and thos any extra feed, (2) effect of concentrates on the growt (3) effect of supplementing rough forage on the milk ewe, (4) difference in losses in flocks fed a concentrate fed, (5) best methods of feeding, (6) proper amounts advisability of the use of alfalfa on the range with the and (8) the desirability of the use of cold-pressed cot versus the ordinary cottonseed cake.

A new war-emergency project will soon be submitted, th of which will be to determine from every view-point o industry the desirability and practicability of (1) feeding ing the wintertime, (2) lambing under sheds or in incl producing nutritious succulent feeds conducive to the gra supply during lambing, (4) raising the large number of l annually lost on account of being orphans.

If all of these projects are to be carried on successfully, necessary to employ an additional man having had training i gative work, more especially that of handling grazing problem

The services of Mr. N. F. Peterson, botanist, have been o and he will devote a large part of his time to the collection and : of range plants and to the study of poisonous plants, more es the study of species which are not considered poisonous, but may be responsible for a large percentage of our annual losses.

The work for the next fiscal year will be devoted largely to tending to reduce annual losses from poisonous plants. We w study methods of handling sheep on the range which will incre production of wool and mutton.

REPORT OF THE DEPARTMENT OF METEOROLOGY

By Dr. J. E. CHURCH, JR.

1. SNOW SURVEYING AND FORECASTING STREAM-FLOW

Whatever extra time could be obtained after teaching and other University duties have been fully met, has been devoted to revising and enlarging the manuscript on Snow Surveying and to obtaining data on some minor problems yet unsolved. Barring unexpected delays, the manuscript should be ready for the printer at or before the close of the present fiscal year (1918-1919).

For purposes of studying the unusual, the present season has been admirable. The snowfall was unusually light during January, but the abnormally heavy precipitation in March increased the mountain snow-cover to 97.4 per cent of the normal.

Since it is believed by some that late-fallen snow melts rapidly and especially since forecasts made this year by ranchers and mountaineers have varied from 50 to 200 per cent of normal, the snow survey the present season has a special significance. The following forecast in tabular form is inserted to show at a glance the general symmetry of snow-cover and stream-flow and the small deviations that are as yet not clearly understood.

General Forecast for Lake Tahoe, April 1

Snow-cover for entire basin.....	97.4%
Normal rise of lake after April 1.....	1.67 ft.
Level of lake, April 1.....	6,227.84 ft.
Maximum level.....	6,229.47 ft.

RISE OF LAKE TO MAY 10

	Normal rise	Forecasted rise	Deficiency in rain on the surface	Corrected forecasted rise	Actual rise	Deficiency unaccounted for
During April.....	+.38 ft.	+.37 ft.	.07 ft.	.30 ft.	.22 ft.	.08 ft.
During May 1-10.....	+.21 ft.	+.19 ft.	.034 ft.	.156 ft.	.15 ft.	.006 ft.

Total gross deficiency unaccounted for..... .086 ft.
 Total net deficiency; i. e., corrected for daily of 18 C. F. S..... .074 ft.
 Percentage deficiency to May 10..... 4.6% of forecast
 At 7,000-8,000 feet elevation, approximately 30% of the snow-cover
 was melted during April.

FURTHER FORECAST

Only .70 in. rain out of normal of 1.78 in. fell in April; and no more fell up to May 16. If, as seems probable, not more than .80 in. of rain falls during the remainder of May and June, the total rainfall for the season of run-off being only 1.50 in. out of normal of 3.94 in., the total correction in the rise of the Lake will be .16 feet or 9.6% of the forecast.

Problems

Three main problems have been considered:

1. To reduce the amount of snow surveying to a minimum and to increase the area served:

2. To detect oscillations in snowfall, especially from west to east over the axis of the Sierra.

3. To determine the causes of certain variations in run-off at present unaccounted for:

(a) Loss in flow due to freezing (?).

(b) Shortage in April, when run-off begins.

The first two problems are being solved by extending the survey area southward to Blue Lakes and westward to Lake Fordyce and Meadow Lake. This was accomplished by the generous cooperation of the Pacific Gas and Power Company. Measurements made at Blue Lakes in 1915-1916 made it possible to obtain comparisons immediately along the axis of the range. The relatively uniformity of the snow-



Figure 8. The Mount Rose Snow-Sampler and Weighing-Gage.

cover for long distances, such as 50 miles, is shown by the following percentages of normal:

Summit Station.....	83%
Ward Creek.....	98.8%
Rubicon Peak.....	93.4%
Mt. Tallac.....	107%
Lake Lucille.....	102%
Blue Lakes.....	99%

This uniformity is probably due to the wide area covered by the "big storms" that furnish the bulk of the winter snow.

The third problem is being attacked by aid of a sand box, through which water is allowed to run under certain controls. A tank above and a catch-basin below complete the outfit. The sand can be pro-

tected against evaporation at will by using a covering of mulch or a canvas.

Experiments with this box have been hindered by the freezing of the contents during the winter. But it is evident that the sand retains some of its acquired moisture long after the run-off has entirely ceased. One wonders, therefore, whether the rains of autumn, if normally copious, are not retained by the particles of sand in sufficient quantity to decrease measurably the amount of additional water required to saturate the soil. Or inversely, whether in 1917 the abnormally dry autumn did not leave the soil so dry that more water from the melting snow than usual was required the present April to prime the soil. At least, the deficiency was .08 ft. despite the fact that the snow cover was late and the temperature for the month 4°F . above normal.

If the effect should be due to lack of autumn rains, the correcting of the original forecast to offset the loss would be simple.

However, a far more vital problem, dependent as much upon a long series of seasonal surveys as upon observation of the flow in the sand box is whether a reduced flow early in the season caused by moderate stoppage of melting is not compensated by an increased flow later in the season. On the solution of this problem depends the accuracy of the revised May forecast. For this purpose a second survey on May 1 is made in one or two typical areas.

PUBLICATIONS

During the year, the paper on Snow Surveying; Its Problems and Their Present Phases with Reference to Mount Rose, read in 1916 before the Second Pan-American Scientific Congress, appeared in the Proceedings of this Congress, vol. II, pp. 496-549.

Reprints of this paper have been widely distributed to serve until the publication of the revised bulletin.

An abstract entitled Snow Surveying has been published in Western Engineering (Feb. 1918), pp. 49-52.

COOPERATION AND EXTENSION

The Department of Engineering of the State of California has informally suggested the extension of the work in the Tahoe Basin to other parts of the Sierra, where they plan to use catchment basins for irrigation as well as for the prevention of floods.

The Pacific Gas and Power Company, with reservoirs on the Mokelumne and the Yuba, have already organized snow parties at Blue Lakes and from Cisco to Lake Fordyce and Meadow Lake.

The supervisors of three National Forests in California are planning to inaugurate snow studies immediately after the war.

Finally, a provisional plan for forecasting the flow of the Humboldt River in Nevada has been requested by the Water Resources Branch of the United States Geological Survey, and furnished. This plan contemplates the use of four courses at the headwaters of the four main tributaries, Lamoille Creek, South Fork, Mary's River, and North Fork.

However, the chief concern at present is to complete the bulletin and to solve the problems already outlined as preliminary to the rapid extension of forecasting stream-flow after the war.

PUBLICATIONS

No. 89, October, 1917—Grain Production in Nevada. By Dean C. S. Knight.

No. 90, February, 1918—Potato Culture in Nevada. By Dean C. S. Knight.

No. 91, February, 1918—Silage Crops for Nevada. By Dean C. S. Knight.

No. 92, February, 1918—Irrigation of Wheat in Nevada. By Dean C. S. Knight.

No. 93, April, 1918—Irrigation of Alfalfa in Nevada. By Dean C. S. Knight.

No. 94, June, 1918—One-Night Camps vs. Established Bed-Grounds on Nevada Sheep Ranges. By C. E. Fleming.

Annual Report for the Fiscal Year ending June 30, 1917.

Technical Papers:

Studies of an Obscure Cattle Disease in Western Nevada; Dr. Edward Records: Journal of American Veterinary Association, Vol. 5, No. 2, November, 1917.

The Serum Treatment of Hemorrhagic Septicemia; Dr. Edward Records: Journal of American Veterinary Medical Association, Vol. 5, No. 7, March, 1918.





STATE OF NEVADA

ANNUAL REPORT

OF THE

STATE SHEEP COMMISSION

1917

S. H. WHEELER, President
G. D. WOLFENSPARGER, Secretary



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT

1918



REPORT FOR THE YEAR 1917

RENO, NEVADA, November 30, 1917.

To His Excellency, HON. EMMET D. BOYLE, Governor of the State of Nevada, Carson City, Nevada.

DEAR SIR: I herewith submit to you the eleventh annual report of the Nevada Sheep Commission for the fiscal year ending November 30, 1917:

At the several meetings of the Commission held during the year the following items were acted upon as of record in minute book of the Commission:

Rate of taxation for the year 1917 was placed at 5 mills (\$0.005) on the dollar of the assessed valuation of all sheep, bucks, and goats in the State of Nevada as reported by the several County Assessors. This rate is 1 mill lower than the preceding year, and it is the opinion of the Board at this time that next year they will be able to make a further decrease in taxation. (Note—Rate for tax year 1918 will be 2 mills.)

General Orders Nos. 23 and 24 were issued during the year and are as follows:

GENERAL ORDER No. 23

WINNEMUCCA, NEVADA, May, 22, 1917.

Upon motion duly made and seconded, it was resolved: That, owing to a serious outbreak of scabies in Humboldt and Elko Counties of this State, you are hereby notified that the inspection and dipping of all exposed or infected sheep necessary for the elimination of said disease shall be under the direct supervision of federal authority, Dr. Robert Dill, Winnemucca, Nevada, in charge.

It was further resolved: That a lime-and-sulphur dip shall be used for all dipping purposes, and all dipping must be under the supervision of a Federal or State Inspector.

It was further resolved: That all sheep in the State shall be dipped for ticks, between the dates of the 1st day of June, 1917, and the 15th day of October, 1917, inclusive.

It was further resolved: That all stock sheep entering the State of Nevada from any known infected districts must be accompanied by clear bill of health, showing that they are free from all infectious diseases. On arrival they must be reported to the Nevada State Commission, or one of its Inspectors, and they then must be dipped once within ten days after entering, and under the supervision of a Federal or State Inspector.

If not accompanied by a clear bill of health, they must be dipped twice within an interval of ten to fourteen days between dippings, by either a Federal or State Inspector.

GENERAL ORDER No. 24

Upon motion duly made and seconded it was resolved: That all sheep and bucks entering the State of Nevada from any known infected area in the State of Idaho shall be accompanied with a federal certificate showing them to have been dipped under government supervision within ten days prior to entrance into the State of Nevada.

The Secretary was instructed to mail Dr. F. E. Murray, Federal Inspector in charge at Salt Lake City, Utah, a copy of the above order.

Had it not been for the very prompt and able assistance rendered by the Federal Bureau of Animal Industry in the outbreak of scabies mentioned in General Order No. 23, infected flocks throughout the State would have been the ultimate result, for, as short-lived as it was, the disease had already considerable headway in seven different counties of the State.

An idea of the work attached to controlling an outbreak of this kind and the area of the ground covered can readily be gained by the following:

112,645 sheep were found infected and dipped twice.

229,564 sheep were found exposed and dipped once.

The disinfecting of numerous feeding and loading corrals, as well as railway cars which in a short time were scattered over a dozen or more different States and very hard to trace.

An infection of a total of 59 herds owned by 13 different owners or companies.

Inspectors covered an area equaling 29,900 square miles.

The above is a complete answer as to why the board always carries a goodly cash balance on hand.

The order issued for the dipping of sheep for ticks was complied with by the numerous owners, and, although we received several objections at the time, the greater majority of them are now well pleased with the results.

The board again wishes to tender its thanks and appreciation on behalf of the sheep owners of the State of Nevada to the Federal Bureau of Animal Industry and its numerous officers for their assistance during the past year, and trusts that the hearty cooperation which has existed for the past eleven years will be continued during the coming twelve months.

ASSESSED VALUATION OF SHEEP, BUCKS, AND GOATS

As Shown by the County Assessors' Reports to the Commission and in Effect for the Tax Year 1917

Counties	Sheep	Bucks	Goats	Valuation
Lander	48,750	95	.....	\$388,200.00
Lyon	26,501	211	.....	138,686.00
Eureka	37,256	28	.....	186,280.00
Douglas	34,196	.....	.....	171,176.00
Esmeralda .....	.....	.....	.....	None
Nye	110,930	32	334	137,978.66
Churchill	44,189	963	74	355,928.00
Ormsby	500	.....	.....	2,500.00
Humboldt	165,199	1,995	.....	1,336,232.00
Lincoln	13,000	200	.....	106,000.00
White Pine	88,589	1,237	.....	451,654.00
Clark .....	.....	.....	.....	None
Washoe	168,518	2,770	.....	1,301,760.00
Storey .....	.....	.....	.....	None
Mineral	32,048	111	.....	190,000.00
Elko	199,058	2,232	.....	1,556,237.00
Totals	968,734	9,874	408	\$6,323,231.66

FINANCIAL STATEMENT**For the Year Ending November 30, 1917**

Balance on hand November 30, 1916..... \$8,370.96

Tax Collections—

Churchill County.....	\$977.28
Douglas County.....	569.19
Elko County.....	5,612.21
Eureka County.....	770.87
Humboldt County.....	4,191.76
Lander County.....	1,020.43
Lincoln County.....	396.21
Lyon County.....	776.15
Mineral County.....	590.48
Nye County.....	1,035.30
Ormsby County.....	25.26
Washoe County.....	3,509.09
White Pine County.....	2,504.23
	<hr/>
	21,978.46

\$30,349.42**Disbursements**

Salaries of Commissioners.....	\$1,499.76
Traveling expense of Commissioners.....	102.05
Salary of Secretary.....	750.00
Refund taxes to Henry Peters.....	30.24
H. W. Jakeman, laboratory work.....	900.00
Office rent.....	360.00
Office expense, including postage, tele- phone and telegraphic charges, express, etc.....	35.66
Stationery and inspection blanks.....	60.60
Advertising general orders.....	264.70
	<hr/>
	\$4,012.01

<i>Inspectors</i>	<i>Salaries</i>	<i>Expenses</i>
Jno. Savat.....	\$35.00	\$109.20
W. E. Yancey.....	270.00	28.00
Sivert Nelson.....	603.00	588.15
A. Geraldo.....	355.00	34.00
V. V. Wyatt.....	1,325.00	697.36
W. D. Mason.....	1,825.00	674.39
Jas. Fraiser.....	385.00	10.50
W. H. Bell.....	895.00	840.20
D. D. Ogilvie.....	1,225.00	208.15
Ben Armstrong.....	220.00	58.50
C. S. Peterson.....	985.00	103.55
R. Barry.....	1,100.00	704.10
	<hr/>	<hr/>
	\$9,313.00	\$4,056.10

Cash balance on hand November 30, 1917..... 13,369.10
12,968.31

\$30,349.42

Bills payable. \$2,728.55.

CONDENSED FINANCIAL STATEMENT

1907 to 1917, Inclusive

<i>Receipts</i>		<i>Disbursements</i>	
1907.....	None	1907.....	\$3,155.30
1908.....	\$7,168.85	1908.....	11,840.82
1909.....	11,124.04	1909.....	11,813.14
1910.....	15,288.63	1910.....	8,882.66
1911.....	15,256.21	1911.....	8,053.54
1912.....	25,522.81	1912.....	8,790.24
1913.....	8,260.32	1913.....	11,119.10
1914.....	6,016.17	1914.....	14,044.86
1915.....	5,728.57	1915.....	13,573.91
1916.....	28,526.27	1916.....	23,247.54
1917.....	21,978.46	1917.....	17,381.11
Balance on hand with State Treasurer November 30, 1917....			12,968.31
\$144,870.33		\$144,870.33	

INSPECTION DISTRICTS

For the convenience of keeping Inspectors within certain working districts, the State has been divided as follows:

Washoe District—Washoe, Storey, Lyon, Douglas, Esmeralda, Mineral, Nye, and Ormsby Counties.

Elko District—Elko, White Pine, Eureka, Clark, and Lincoln Counties.

Lovelock District—Humboldt, Churchill, and Lander Counties.

Respectfully submitted,

S. H. WHEELER,
President.

Approved: C. W. GRISWOLD,
JOHN G. TAYLOR,

Attest: G. D. WOLFENSPARGER, *Secretary.*

Commissioners.



STATE OF NEVADA

ANNUAL REPORT

OF THE

STATE SHEEP COMMISSION

1918

S. H. WHEELER, President
G. D. WOLFENSPARGER, Secretary



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : JOE FARNSWORTH, SUPERINTENDENT

1919



REPORT FOR THE YEAR 1918

RENO, NEVADA, November 30, 1918.

To His Excellency, HON. EMMET D. BOYLE, Governor of the State of Nevada, Carson City, Nevada.

DEAR SIR: I herewith submit to you the twelfth annual report of the Nevada Sheep Commission for the fiscal year ending November 30, 1918:

At the several meetings of the Commission held during the past twelve months the following items were acted upon as of record in minute-book of this Commission:

The rate of taxation for the tax year 1918 was placed at 2 mills (\$0.002) on the dollar of the assessed valuation of all sheep, bucks, and goats in the State of Nevada as reported by the several County Assessors. The rate for the tax year of 1919 will be 3 mills.

Dr. Robert Dill (late of the Federal Bureau of Animal Industry) was appointed Inspector in Charge of all Field Work in the State. Dr. Dill entered upon his duties March 1, 1918.

GENERAL ORDER No. 25

That all sheep or bucks entering the State of Nevada from any other State, either by rail, trail, driven, or allowed to drift, for purposes other than slaughter, shall be accompanied by a federal or state certificate showing them to be free from infectious diseases; date of said certificate being within ten days prior to entry into the State.

It is further ordered: That it shall be the duty of the owner or person in charge of such sheep or bucks to notify the Nevada State Sheep Commission, P. O. Box 782, Reno, Nevada, or one of its Inspectors, either in person or in writing, of such fact immediately before entering the State, stating the time and the place where such sheep or bucks shall enter.

It is further ordered: That it shall be the duty of the railways or their agents to notify the Nevada State Sheep Commission, P. O. Box 782, Reno, Nevada, or one of its Inspectors, either in person or in writing, of the time when and the place where such sheep or bucks shall be unloaded.

Mr. H. W. Jakeman requested that his resignation be accepted, to take effect August 1, 1918. Dr. Jakeman had been in service in the laboratory of the State Veterinary Control Service for the past three years. Dr. R. C. Louck succeeds him.

INSPECTION REPORT

November 30, 1917, to November 30, 1918

Inspected, 1,865,617. Scabby, 43,637.
 Free, 1,727,218. First dipping, 226,509.
 Exposed, 94,762. Second dipping, 43,637.
 88,147 free sheep were also dipped for ticks.

Percentage of infected sheep shows slightly less than $2\frac{1}{2}$ per cent of the total number inspected.

Total number of visits to herds, 1,303.

Infected sheep were found in 26 flocks.

In 9 herds of the above, the infection was evidently due to wilful carelessness of the owners in not bringing in and dipping all of their bucks in 1917.

Two herds evidently got the scab from coming in contact with infected sheep in an adjoining county before the scabby sheep there had been put in quarantine.

Seven herds were infected by going on quarantined ground; in all of these seven cases the owners or foremen were notified personally of the dangerous ground and to keep off same.

One infected herd was due to the owner deliberately taking scabby sheep from a quarantined herd and putting them with his clean sheep.

One herd found scabby was evidently due to insufficient dipping.

Six herds of infected sheep were brought into Nevada without inspection or otherwise complying with the rules and regulations of this Commission.

During the past year the Bureau of Animal Industry, United States Department of Agriculture, again extended the Commission and sheep owners in Nevada many courtesies and much valuable assistance, for all of which due acknowledgment is made.

ASSESSED VALUATION OF SHEEP, BUCKS, AND GOATS

As Shown by the County Assessors' Reports to the Commission and in Effect for the Year of 1918

<i>Counties</i>	<i>Sheep</i>	<i>Bucks</i>	<i>Goats</i>	<i>Valuation</i>
Clark	87	.....	.....	\$783.00
Churchill	22,417	480	140	208,851.00
Douglas	42,588	246	.....	386,244.00
Elko	205,707	2,616	28	1,883,007.00
Esmeralda	80	2	85	999.00
Eureka	43,150	650	.....	396,150.00
Humboldt	158,165	2,217	13	1,450,206.00
Lander	56,560	.....	.....	509,040.00
Lincoln	15,580	50	.....	140,820.00
Lyon	36,548	138	.....	330,548.00
Mineral	29,100	105	20	263,340.00
Nye	25,948	277	364	240,132.00
Ormsby	1,300	.....	.....	11,700.00
Washoe	165,170	3,106	.....	1,523,802.00
White Pine.....	102,211	1,333	.....	935,795.00
Totals.....	904,611	11,220	659	\$8,281,417.00

FINANCIAL STATEMENT**For the Year Ending November 30, 1918***Receipts*

Balance on hand November 30, 1917..... \$12,908.31

Tax Collections—

Churchill County.....	\$1,778.88
Douglas County.....	1,315.03
Elko County.....	7,842.61
Eureka County.....	1,464.52
Humboldt County.....	6,579.10
Lander County.....	1,943.90
Lincoln County.....	1,385.55
Lyon County.....	1,172.94
Mineral County.....	1,343.66
Nye County.....	1,113.39
Ormsby County.....	.31
Storey County.....	2.04
Washoe County.....	6,572.93
White Pine County.....	4,567.90

37,082.77

Fourth Liberty Loan bonds..... 20,000.00

\$70,051.08

Disbursements

Commissioners' salaries.....	\$1,490.76
Commissioners' traveling expenses.....	73.64
Salary of Secretary.....	750.00
One Chevrolet automobile, equipped.....	824.45
Insurance on above (one year).....	17.85
H. W. Jakeman, laboratory work.....	775.00
R. C. Louck, laboratory work.....	250.00
Office rent, postage, stationery, telephone and tele- graphic charges, express, etc.....	504.60
Advertising general orders in state papers.....	61.00
Purchase of Fourth Liberty Loan bonds.....	20,000.00

\$24,756.30

<i>Inspectors</i>	<i>Salaries</i>	<i>Expenses</i>
A. Geraldo.....	\$320.00	\$39.00
W. D. Mason.....	1,000.00	600.77
W. E. Yancey.....	85.00	
C. S. Peterson.....	415.00	238.80
W. H. Bell.....	305.00	170.05
D. D. Ogilvie.....	1,625.00	1,082.22
John Saval.....	110.00	461.40
Sivert Nelson.....	675.00	611.60
J. F. Rogers.....	430.00	.20
V. V. Wyatt.....	1,600.00	487.61
R. Barry.....	975.00	1,051.24
Robert Dill.....	2,000.00	527.39
	\$9,540.00	\$5,270.28

Cash balance on hand November 30, 1918..... 10,484.50

Fourth Liberty Loan bonds with State Treasurer..... 20,000.00

\$70,051.08

REPORT OF STATE SHEEP COMMISSION

CONDENSED FINANCIAL STATEMENT

1907 to 1918, Inclusive

<i>Receipts</i>		<i>Expenditures</i>	
1908.....	\$7,168.85	1908.....	\$11,840.82
1909.....	11,124.04	1909.....	11,813.14
1910.....	15,288.63	1910.....	8,882.66
1911.....	15,256.21	1911.....	8,053.34
1912.....	25,522.81	1912.....	8,790.24
1913.....	8,260.32	1913.....	11,119.10
1914.....	6,016.17	1914.....	14,044.86
1915.....	5,728.57	1915.....	13,573.91
1916.....	28,526.27	1916.....	23,247.54
1917.....	21,978.46	1917.....	17,381.11
1918.....	37,082.77	1918.....	19,566.58
1918, Liberty Bonds.....	20,000.00	1918, Liberty Bonds.....	20,000.00
Cash on hand with State Treasurer November 30, 1918.....			10,484.50
Fourth Liberty Bonds with State Treasurer November 30, 1918.....			20,000.00
	<u>\$201,953.10</u>		<u>\$201,953.10</u>

Respectfully submitted,

S. H. WHEELER,
*President.*Approved: JOHN G. TAYLOR,
C. W. GRISWOLD,
*Commissioners.*Attest: G. D. WOLFENSPARGER, *Secretary.*



**AGRICULTURAL EXPERIMENT STATION
THE UNIVERSITY OF NEVADA**

Bulletin No. 90

February, 1918

POTATO CULTURE IN NEVADA

By

C. S. KNIGHT, B.S.,

**Dean of the College of Agriculture, and Agronomist of the
Agricultural Experiment Station**

**PUBLISHED BY THE UNIVERSITY OF NEVADA
RENO, NEVADA**



CARSON CITY, NEVADA

**STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT
1918**

NEVADA AGRICULTURAL EXPERIMENT STATION

BOARD OF CONTROL.

HON. JAMES F. ABEL (1917-1921), Chairman	Reno
HON. JAMES W. O'BRIEN (1915-1919)	Sparks
HON. JOHN J. SULLIVAN (1915-1919)	Reno
HON. B. F. CURLER (1917-1921)	Elko
MRS. EDNA C. BAKER (1917-1919)	Sparks

OFFICERS

WALTER E. CLARK	President of the University
MRS. LOUISE BLANEY	Secretary
CHARLES H. GORMAN	Comptroller

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EDWARD RECORDS, V.M.D.	Acting Veterinarian
JAMES EDWARD CHURCH, JR., Ph.D.	Meteorologist
C. ALFRED JACOBSON, Ph.D.	Chemist
CHARLES S. KNIGHT, B.S.	Agronomist
CHARLES E. FLEMING, B.S.A.	Range Management
STEPHEN LOCKETT, V.M.D.	Assistant Veterinarian
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VERNER E. SCOTT, B.S.	Consulting Dairy Husbandman
MRS. T. W. COWGILL, M.A.	Librarian
HESTER MAYOTTE	Secretary

LETTER OF TRANSMITTAL

RENO, NEVADA, February 15, 1918.

GOVERNOR EMMET D. BOYLE, *Carson City, Nevada.*

DEAR GOVERNOR BOYLE: In April, 1917, the Nevada Agricultural Experiment Station published Bulletin No. 87 entitled "Home Potato Patches," by C. S. Knight, Dean of the College of Agriculture, and Agronomist of the Agricultural Experiment Station.

The demand for this bulletin was so heavy that early in the year the edition was exhausted. As requests for copies are still received almost every day, it now seems advisable to republish.

A large part of the information contained in Bulletin No. 87 was derived from series of experiments included in Projects 1 and 2, Hatch Fund. To this we have added a considerable amount of general information needed by potato growers at the present time. We are, therefore, presenting the bulletin again in a more expanded form and under a new serial number.

In 1917 many tracts of over five acres of potatoes were grown on waste land not previously cultivated. For the benefit of growers of these larger patches information has been included on the use of potato machinery and the general care of larger crops.

Respectfully submitted,

S. B. DOTEN,
Director,

ACKNOWLEDGMENT

The author wishes to acknowledge his indebtedness for cuts used in this bulletin as follows:

Figure 2—H. A. Hyde, Watsonville, Cal.

Figures 4 and 8—Hoover Manufacturing Co., Avery, Ohio.

Figures 5 and 6—Wm. Stuart, Bureau of Plant Industry, U. S. Department of Agriculture.

Figure 7—Aspinwall Manufacturing Co., Jackson, Mich.

Figure 9—Bateman Manufacturing Co., Grenlock, New Jersey.

Figure 12—The John Deere Co., Moline, Ill.

Figure 13—Champion Potato Machinery Co., Hammond, Ind.

Figure 14—Dowden Manufacturing Co., Prairie City, Iowa.

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POTATO CULTURE IN NEVADA

INTRODUCTION

Nevada made a wonderful showing in 1917 by an increase of more than 200 per cent over previous years in the growing of home potato patches and gardens, by utilizing back yards, vacant lots, and fields not previously cultivated. It has been estimated that over three million such gardens were grown last year by this Nation, producing more than three hundred million dollars in food products.

The planting of home potato patches was a new venture for many residents of the cities and towns in Nevada, and a few were unsuccessful with their crops. However, the increased knowledge of handling the crop, together with the Nation-wide success of the garden movement in 1917, gave a great stimulus to the beginner in planning for a potato patch this year with a determination to be successful. On



Fig. 1—Harvesting Potatoes on the Truckee Meadows. A Very Desirable Market Potato.

account of the still greater demand for food for export in 1918 the people of the Nation are called upon to give more consideration than ever before to the growing of home gardens.

The potato occupies an important place in the diet of our entire population. It is not a difficult crop to grow under irrigation, and requires much less attention than a variety of vegetables planted in the same area. It will thus be possible for a large number of people in Nevada, who cannot devote the time required for a vegetable garden, to plant small tracts of potatoes. By following the instructions included in this pamphlet the crop will be grown with the least possible amount of labor, and at the end of the season the family will have on hand a year's supply of potatoes.

SOILS FOR POTATOES

The potato requires a fertile mellow soil, either a sandy or clay loam, well supplied with organic matter. The cultivation is easier on the sandy loams, and the danger of overirrigation is less, although, when properly handled, the clay loams produce equally well. Soils rich in humus or vegetable matter are especially well suited to potato culture, thus no other staple crop grown in Nevada is so well adapted to old alfalfa land.

PREPARING THE GROUND FOR PLANTING

The ground should be cleared of all rubbish, such as rocks, bricks, boards, chips, and weeds, for, if turned under by the plow or spade, they will prevent the seed-bed from packing sufficiently for the uniform and rapid germination of the seed after planting.

The ground should be plowed or spaded at least 8 inches deep as soon as possible, care being taken not to work the ground when too wet, which is indicated by the soil sticking to the shovel or plow in turning. The same day the ground is plowed or spaded it should be harrowed or raked, and a coarse dirt mulch left on the surface. This coarse mulch prevents rapid evaporation, and after a rain is easily renewed. If a fine dirt mulch is made after spading or plowing, a heavy rain will pack the surface to such an extent that a new mulch is difficult to prepare. The ground should remain in this condition from 1 to 3 inches until planting time to furnish a firm seed-bed for uniform germination of the seed and rapid development of the young plants.

LIMING HEAVY SOILS

Much of the soil in Nevada is heavy clay that is prepared for crops and cultivated with some difficulty; also, when the proper hoeing and cultivation is not given, the results are often unsatisfactory. This objection can be largely overcome by applying gypsum when preparing the ground for planting. Two methods may be used to apply the gypsum. If the ground is to be spaded by hand, the gypsum can be spread over the area quite uniformly with a shovel, and when the ground is spaded the lime is turned under with the inverted soil. If the ground is to be plowed, the gypsum may be applied with a shovel after plowing, and later covered by the harrow in the preparation of the seed-bed. Ten pounds of gypsum should be used for every 100 square feet of surface. This is at the rate of about two tons per acre:

INCREASE PRODUCTION BY USE OF MANURE

From the fact that considerable labor and expense is involved in the proper handling of a potato crop, the grower should aim to keep the soil in the highest possible state of fertility, by frequently manuring the land. The manure is best applied during the fall and winter months when the land is not growing a crop and preferably on land that is to be plowed before another crop is planted.

Every crop removed from the soil takes away certain materials that are essential in the growth of the plant. Soils will gradually decrease in their producing capacity when crops are grown continuously on the land without adding fertility. From the fact that about 40 per cent of the fertility removed from the soil may be recovered in the manure, one of the best means of maintaining the fertility of the soil is to return the manure to the land.

Manure to be most effective should be plowed under where its constituents will come in contact with the roots of the crop. Manure should not be covered so deep as to prevent fermentation. On clay soils the covering should not be over four inches, while with sandy soils a six-inch covering is not considered too deep.

Heavy applications of manure during dry seasons may result in a physical injury to the soil, due to a lack of moisture to cause the organic matter to decay. For this reason it is a good plan to irrigate the ground in the fall before applying the manure and plowing or spading it under.

Fresh manure may be injurious to potatoes, as it tends to produce scabby, undesirable tubers. For this reason in manuring land for this crop well-rotted manure should be used.

The amount of manure to apply depends upon the kind of soil and the quality of manure. Generally about 50 pounds for every 100



Fig. 2—Hill Selection versus Bin Selection:

Hill Selection—Average Weight of Two Hills Shown on Left, 5 pounds.

Bin Selection—Average Weight of Two Hills Shown on Right, 3 pounds.

square feet or 10 tons per acre is considered a good average application for ordinary farm crops, while 20 tons per acre is often not considered excessive for light sandy soils in the production of potatoes. Usually when such heavy applications are used, the manure is well rotted. Too liberal applications of manure are often wasteful, and better results are generally realized by the use of frequent light applications.

IRRIGATION BEFORE PLANTING

If irrigation is necessary before planting, it should be given before the ground is spaded or plowed. The coarse dirt mulch left on the surface by the rake or harrow retains sufficient moisture in the soil for sprouting the seed and for the early development of the plant. An irrigation after spading would cause the soil to pack too much and a second spading would be required.

SEED POTATOES

The Experiment Station has tested a number of varieties of potatoes during the past five years, with the result that Great Divide, Burbank, and Peerless were the highest average producers, in the order named. These varieties have been grown in Nevada for many years and indicate the value of well-selected home-grown seed as compared with that introduced from other States. The Netted Gem, commonly called the "rough-skinned Burbank," is advancing in popularity in several potato districts of Nevada.

A small amount of seed was grown in 1917 of each of nine leading varieties of potatoes which are being tested in different Western States under irrigation, the object being to obtain a sufficient amount of seed for a test of these varieties in 1918 in comparison with our present high producers. Included in this list are Producer, White Rose, American Wonder, Pride of Multnomah, Earliest Fall, Snow (California), Early Prize Taker, Scotch Rose, and Snow (Oregon).

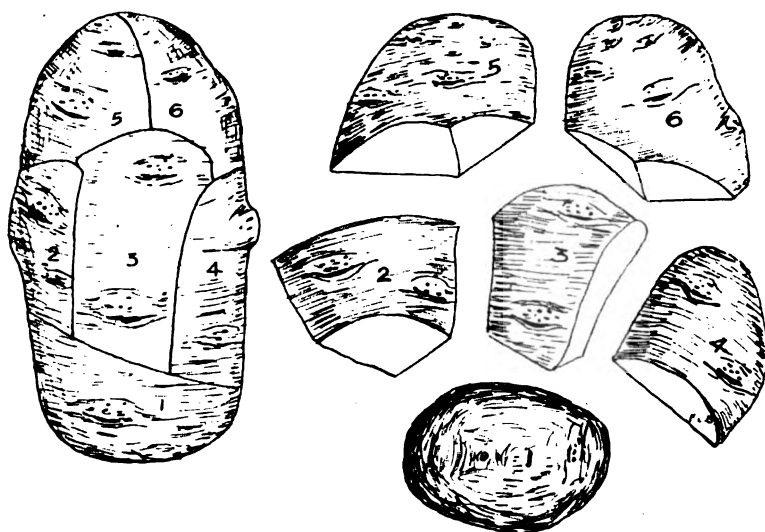


Fig. 3—A Potato weighing 10 to 12 ounces properly cut for seed.

SEED SELECTION

The most successful method of securing seed potatoes is to go through the field at digging time and dig the strongest plants that appear most productive. If the hill has the proper number of uniform-shaped tubers that are free from scab or other disease, the potatoes from this hill should be saved for seed. By this method in a very short period of time the farmer, with the help of two or three boys, can obtain excellent seed for planting the following year. This method is more expensive than getting seed from storage, but the increased production the following year pays many times for extra labor involved in gathering the seed.

For this reason the seed should be secured in the fall when the grower has the opportunity of knowing how the potatoes were grown and that they were properly stored through the winter months so that their germinating power has not been impaired.

PROPER STORAGE OF SEED IMPORTANT

Seed potatoes should be so stored that they will remain dormant during the winter. Potatoes that have been affected by chilling or heating during the period of storage will not produce a perfect healthy stand when planted the following spring. During storage of potatoes in Nevada the past winter, heating followed freezing in many cases. In some instances the freezing was so severe that decomposition of the tissue took place, causing the starch to change to sugar. This seriously impaired the vitality of the seed, and led to the poor weak development of potatoes in many of our fields the past season.

Growers may realize good crops of potatoes from seed taken from the general lot in the spring, but a marked increase will be noted in



Fig. 4—A Machine used in cutting large quantities of Potatoes for Seed.

the production of good uniform potatoes when the seed is obtained by the method of hill selection from the field in the fall.

TREATMENT FOR DISEASE

The following treatment is recommended for the prevention of scab and other diseases: All seed potatoes should be soaked in a solution of mercury bichloride (corrosive sublimate), 4 ounces in 30 gallons of water, for one and one-half hours. Formalin treatment will not kill *rhizoctonia* as completely as mercury bichloride. The solution should be placed in a wooden barrel or tank. It corrodes metal. It should be

poured out and made up fresh after it has been used to disinfect four lots of potatoes. It is poisonous if eaten, but is not poisonous to the touch. Treated potatoes should not be eaten or fed. After the potatoes have been treated, they should be stored in new sacks which have been similarly disinfected in the solution.

The formalin treatment is as follows: Prepare the solution by adding one pint of 40 per cent formaldehyde to 30 gallons of water. Place the sacks of potatoes in the solution and leave submerged for two hours. After removing from the solution the potatoes should be dried, cut and planted. However, if stored for a short time, they should be returned to the same sacks which have been disinfected by the solution.

CUTTING THE SEED

The potatoes should not be cut in pieces less than one ounce in size, and the best crops will be obtained where the pieces are from one and one-half to two ounces. The seed piece should have two good eyes.

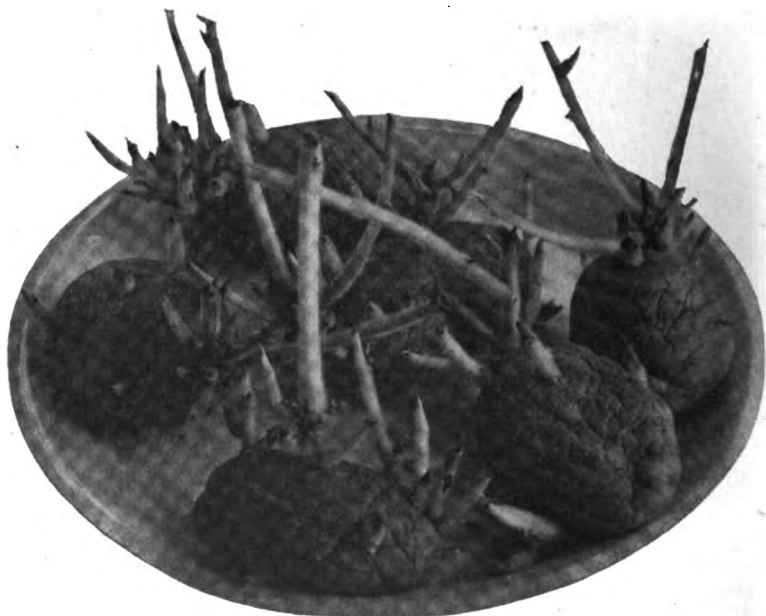


Fig. 5—Excessive Sprouting saps the vitality of the Potato for Seed.

Where more than this number of eyes is present or where larger pieces are used, the soil must be very fertile and the seed pieces must be planted farther apart in the rows, otherwise the percentage of small tubers may be too great.

A good method to follow in cutting the seed is to begin cutting from the stem end, diagonally across the potato, being careful to cut the seed end so that too many eyes are not left in one piece.

The seed should be planted not later than the day after being cut. If exposed to warm windy weather for any length of time, too much moisture may be lost and the seed may be injured by excessive drying.

A common practise in Nevada is to place the cut seed loosely in the disinfected sacks and store for a time in a well-ventilated place, being careful not to stack the sacks in a large heap. This often injures the

seed by causing it to turn black before the moisture has evaporated from the cut surface.

SPROUTING THE SEED

Certain growers in Nevada have used the method of sprouting the seed where early potatoes were desired. The general method followed consists in placing the potatoes on a clean floor about six inches deep, where they have access to the light, for about a month. The potatoes are turned every few days in order to obtain uniform sprouting. When the potatoes are handled carefully by this method, very little injury is caused by the breaking off of the sprouts and excellent results are realized.

GREENING SEED POTATOES

This practise consists of removing the seed potatoes from storage in the spring before sprouting has commenced, spreading them over a clean area in a layer about 6 inches deep, and exposed to the light, and

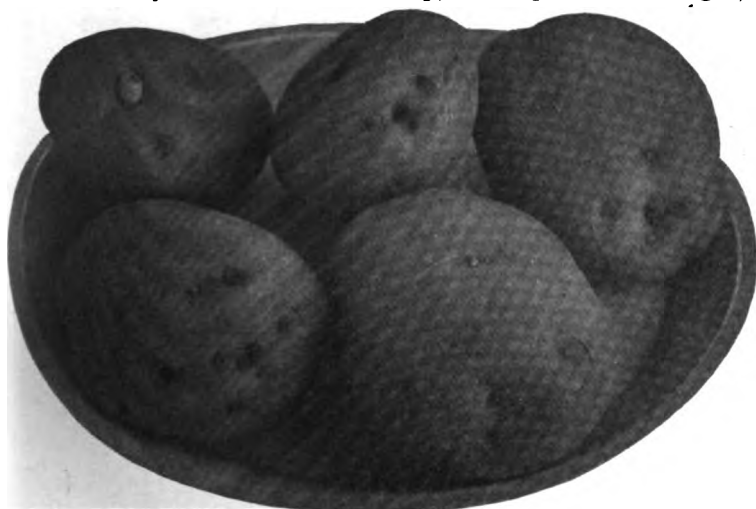


Fig. 6—The Ideal Stage of Sprouting for the Seed Potato.

turning them about every ten days. This treatment produces a green tough skin which is not easily rubbed or broken. It has been used in preference to the corrosive sublimate or formalin treatment by the Colorado Station in the prevention of disease. This practise is not common in the potato districts of Nevada.

RATE OF SEEDING

Where one-ounce seed pieces are used, the potatoes should be planted in rows 3 feet apart and about 15 inches apart in the row. With two-ounce seed pieces the distance apart in the row may be 18 inches.

The amount of seed required per acre with different sized seed pieces is shown in the following table:

<i>Weight, ounces</i>	<i>Pounds of seed 15 inches between hills</i>
1.0.....	720
1.5.....	1,080
2.0.....	1,440

PLANTING

In most parts of Nevada the late potatoes are planted between May 1 and 20, usually about 4 or 5 inches deep, on land spaded or plowed at least 8 inches deep before the 1st day of May.



Fig. 7—A One-man Potato Planter. The Seat is located in front of the Seed Hopper.

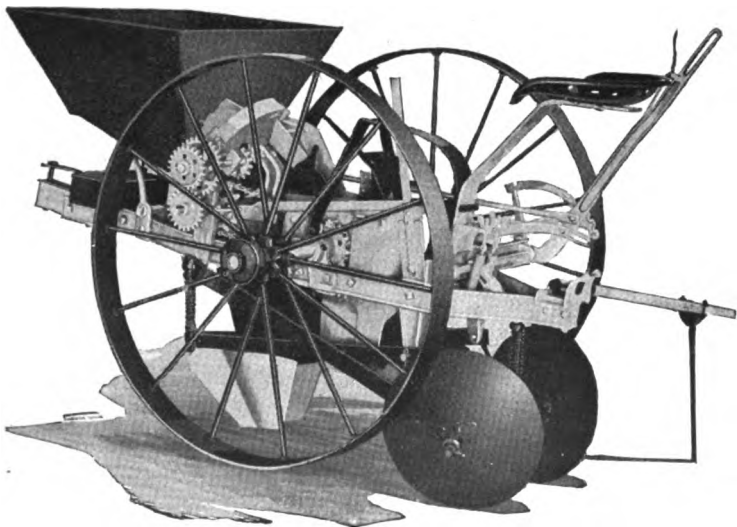


Fig. 8—A One-man Potato Planter. The Seat is located behind the Seed Hopper.

On small tracts a common method of planting is to plow the land shallow and drop the seed in every third furrow. A large number of the home potato patches, however, will be too small for the use of the plow, in which case the planting may be done with the use of the shovel or hoe. On the small tracts it is advisable to mark out the land in checks, so that the hills of potatoes will be uniformly spaced.

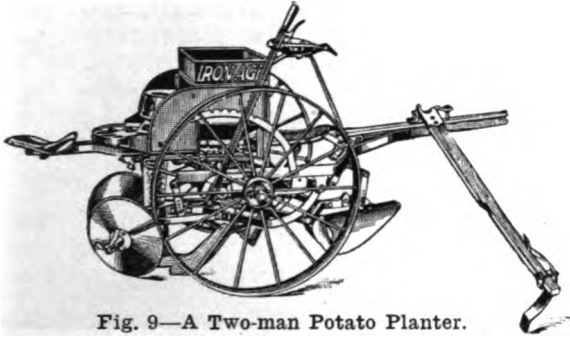


Fig. 9—A Two-man Potato Planter.

IRRIGATION

The potato rows should be hilled up with good deep furrows between them, so that, when irrigated, the water will supply the deep-feeding roots, but will not come in contact with the tubers.



Fig. 10—Irrigating a Field of Nevada Potatoes

A too common error with the potato grower is the use of shallow furrows for carrying the water. The chief danger is in saturating the ground around the tubers, causing the soil to become hard and compact, a very undesirable condition for the development of a good hill of uniform potatoes. It is thus very important to use light irrigations in good deep furrows.

In irrigation experiments with potatoes conducted at the Experiment Station, the results of the test for the past four years favor the 3-inch irrigations as compared with 6- and 9-inch applications. The most practical results were obtained with six 3-inch irrigations, or a total of 18 inches of water, given when the plants showed a tendency to wilt.

In the irrigation of potatoes, the best results were obtained when the first irrigation was withheld until the plants turned a darker green color, but had not wilted. This condition permitted the greatest possible root development to supply the necessary food for a maximum crop. Early irrigation, before the plants showed any need of water, greatly retarded the proper development of root system, and resulted in a decreased yield of potatoes.

After irrigation had started, it was found very essential never to allow the plants to suffer for lack of water during the growing season. Where any plants wilted slightly after irrigation commenced, the growth of the plant was greatly checked, and the yield and quality of the tubers were seriously affected.

The potato crop should never be irrigated by means of flooding or surface sprinkling, since both methods cause the soil to pack around the tubers and prevent the ground from receiving sufficient water for the need of the plants. All water applied to the potato crop should run in small streams through deep furrows made between the rows of potatoes.



Fig. 11—The Proper Method of Irrigation for Potatoes.

OVERIRRIGATION AND POOR DRAINAGE

The potato crop is very sensitive to an excess of moisture in the soil. Most of the failures in potato growing in this State have occurred on the heavy lands, and have been due chiefly to this one cause. Soils which contain an excess of water are too cold for the proper development of the potato and offer conditions favorable to the formation of scab and rot. Most of the soils on the Experiment Station Farm are too heavy and too level for good results with potatoes. It is noted above that the most practical method of irrigation was by the use of light applications when the plants had turned dark-green in color. At the time of harvest this ground turns up in large clods unless irrigated immediately before digging. This condition indicates that the ground has packed too firmly for the proper development of uniform marketable potatoes. Such lands are made more porous by a heavy application of lime or gypsum, but the potatoes are liable to be badly affected with scab, as is the case when fresh manure is used in large quantities. Many growers overcome this objection on heavy soils, by planting the potatoes on land with a considerable slope. Here the drainage is good and there is less danger that the soil will remain too wet.

For the best results with potato growing, well-drained land is essential, and only moderate applications of water should be given the crop when needed.

· CULTIVATION

Cultivation should be given after each irrigation until the plants are so large as to be injured by the horse or cultivator. Cultivation is just as important as irrigation for success in potato culture, since it thoroughly aerates the soil, keeps down the weeds, helps to retain moisture in the soil and maintains a good deep furrow for irrigation. The soil should be kept in a moist condition until the potatoes are fully

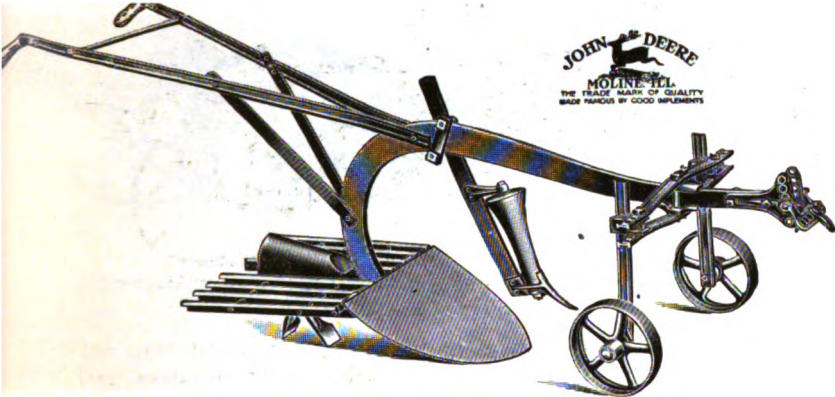


Fig. 12—A Walking Potato Digger, commonly used by the small grower in Nevada.

grown. In most of the potato districts of Nevada, irrigation will generally cease from August 15 to 31, varying with the season and time of planting.

Practically all cultivation on the home potato patches will be given with a hoe. Even though weeds are not present to any great extent, cultivation with the hoe is still very important in order to keep the soil

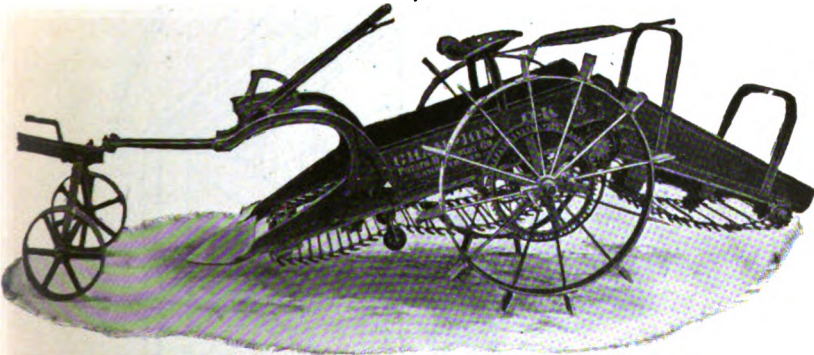


Fig. 13—One Type of Sulky Potato Digger used in Nevada.

in a loose mellow condition around the tubers. The most important reminder for the potato-grower is to eradicate all weeds while still small. If weeds are allowed to grow for several weeks, they are not only removed by the hoe with considerable difficulty, but they also drain the soil of moisture and plant-food which should be utilized by the potato plants for a maximum production.

THINNING

The thinning of potatoes grown under irrigation has not been practised with any degree of success where tried in Nevada. The object of thinning is to remove the less thrifty stems and to establish unifor-

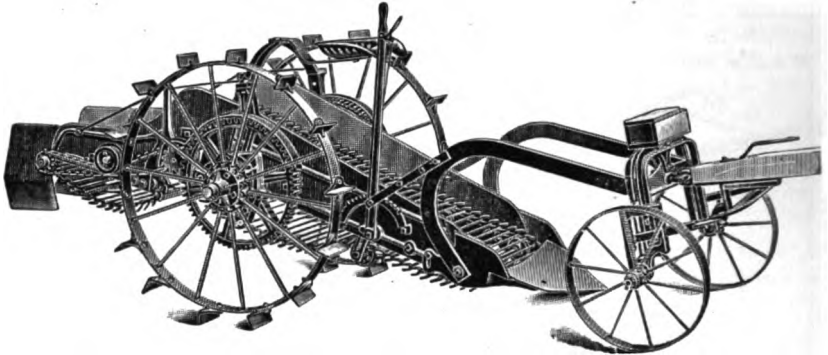


Fig. 14—Another Type of Sulky Potato Digger used in Harvesting Nevada Potatoes.

mity in the number of stems per hill. The Montana Station conducted experiments in 1913 and 1914 on the thinning of potatoes, and, with the Burbank variety planted 12 inches apart in the rows, the yield of marketable potatoes was over 20 per cent higher for the unthinned potatoes than for those which were thinned.

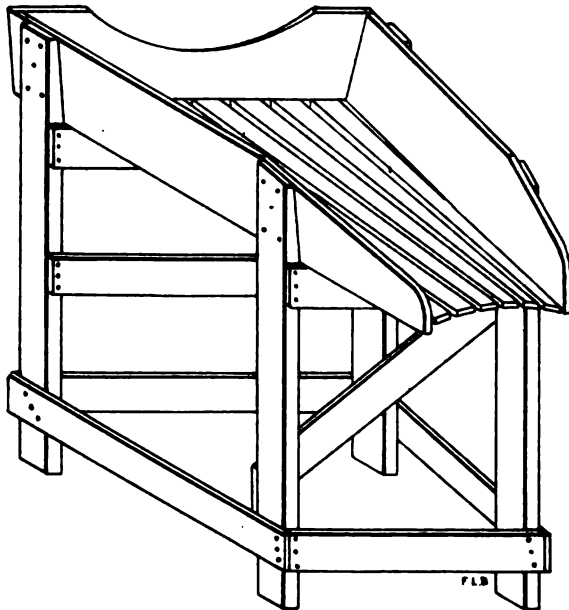


Fig. 15—A Simple Type of Hand Potato Sorter.

The thinning of potatoes is not to be recommended for Nevada growers, and where seed pieces are used with not more than two or three

good strong eyes, little trouble is encountered in producing too many stems to the hill.

SORTING FOR MARKET

The demand for a more uniform potato that is free from disease and blemishes has caused a number of Nevada growers to sort or grade their potato crop before marketing. For small lots an ordinary hand sorter is very effective. This consists simply in an inclined table with slats to allow the dirt to fall through, and with the lower side open so that the market potatoes can pass into the attached sack. This is not a very long or difficult process, and it adds greatly to the market value and keeping quality of the potato. The culls may be used on the farm as a succulent feed for dairy cattle or hogs.

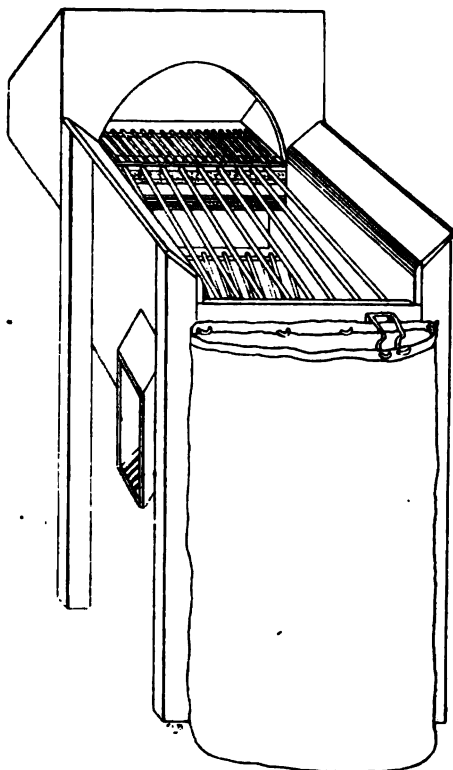


Fig 16—A Potato Sorter showing Sack Attachment for Market Potatoes.

The standard market grades as now established in the United States are as follows:

- No. 1—Potatoes over $1\frac{7}{8}$ inches in diameter for the round varieties and $1\frac{3}{4}$ inches in diameter for the long varieties. Less than 5 per cent shall be undersized, and an additional 3 per cent is allowed for injured potatoes.
- No. 2—Potatoes over $1\frac{1}{2}$ inches in diameter and not more than 5 per cent undersized. An additional 5 per cent is allowed for injured potatoes.

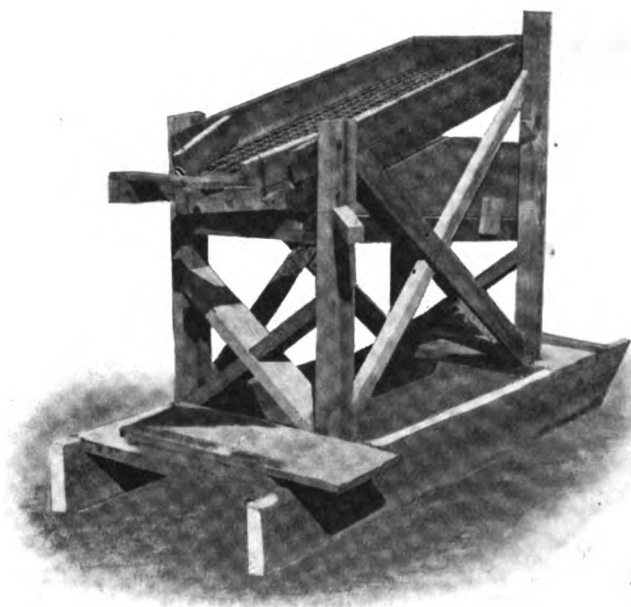


Fig. 17—A Home-made Sled Potato Sorter used in the Truckee Valley. One man with this Machine follows five pickers in sorting and sacking the potatoes ready for market.

STORING

On account of the severe winters, which occur in Nevada from time to time, growers should provide storage facilities for their crops that the tubers may not be injured by freezing or heating. Both the cellar and the ordinary field pit may be used successfully for this purpose. In Bulletin 79 of the Idaho Experiment Station, the following information is given concerning potato cellars, which is very applicable to Nevada conditions:

In a dry well-drained location a pit four feet deep and any width and length to accommodate the needs should be dug. A knoll is preferable to a side hill. It may be stated that a cubic foot will store approximately forty pounds. The studding for side walls may be posts set firmly in the ground and should rise a foot above the surface of the ground. The roof need not have greater than one-fourth

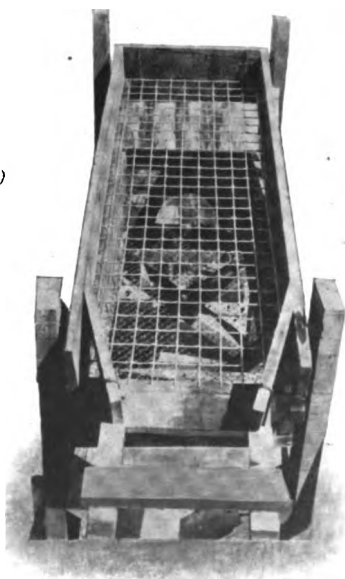


Fig. 18—Another View of the Home-made Sled Potato Sorter.

pitch. It may be built of round poles or 4x4-inch timbers for the rafters and covered with stock lumber. Ventilators 10x10 inches are necessary every sixteen feet in the ridge. The whole structure is now ready for the final covering, and it may be started with eighteen inches of straw and then six to eight inches of the soil which was removed from the pit.

Where large amounts are to be stored the cellar should be wide enough to permit of a driveway. There need not be a door at each end, although that is better. Where the crop is stored in sacks a floor is necessary, as sacks will rot if put in contact with the soil. This floor may be slatted, as this will facilitate ventilation.

The temperature for best results should be but two or three degrees above the freezing-point, 34°F. being ideal. This temperature should be maintained as nearly as possible. With some attention this is simple. Where the nights of spring and fall are cool, as in almost all parts of the State, the opening of doors in the evening and closing early in the morning after the crop is put in will soon reduce the temperature to the standard. It can be maintained quite closely by the judicious use of the doors throughout the storage season.

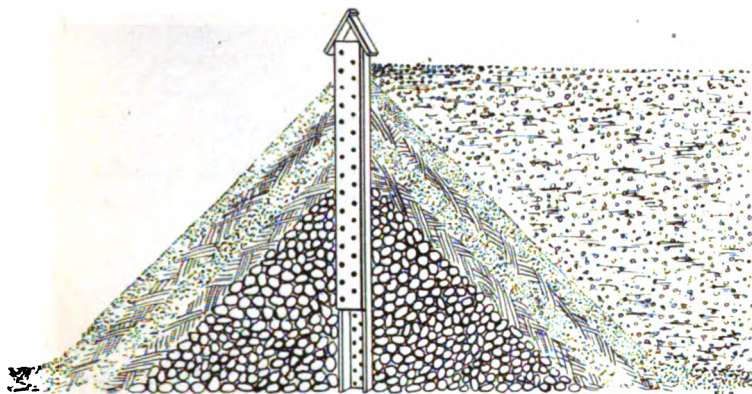


Fig. 19—A Potato Pit used in storing a large portion of the Nevada Potato Crop.

Much of the Nevada potato crop is stored in field pits, which are located on high land in the field where good drainage is possible. The bulletin on Nevada Potatoes, by C. A. Norcross, describes in detail the storing of potatoes in pits as follows:

Having chosen a site for a pit, scrape off about six inches of the top soil, and form a ridge about the base of the proposed pit, which should be about four and one-half or five feet wide by sixteen or twenty feet long. Tramp the bed so it is as hard and firm as possible and smooth it. The potatoes are poured into this open pit on the dirt and piled to a triangle point or ridge, the length of the pit. When so piled, cover the potatoes with dry potato vines or straw so that when compressed the mat will be three or four inches in thickness. Over this layer of vines or straw throw a six-inch layer of dry dirt, leaving two or three openings at the top of the pit for the escape of heat and moisture. Pat the outside of the dirt covering with the back of a shovel until it is firm and smooth so that rain will run off rather than percolate.

Next, dig a drain around the pit and leading away from it, and the first stage of the pit is completed. After a week or so close the openings left for

ventilation. Before freezing weather commences in earnest add a foot or more of soil to the pit covering, pat it down, and see that the drainage ditches are open. The depth of the final soil-covering varies in different sections, and the experience of local farmers is the best criterion.

Pits should be located north and south, rather than east and west, in order to render uniform the sunshine on both slopes. When placed east and west the north slope is usually damper than the other and is slower to thaw in the spring. The sunshine, while it warms the sides, also evaporates the moisture, rendering a north-and-south pit drier than one that is east and west.

For further information on potato culture, address

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RENO, NEVADA.



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MANGANESE

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MANGANESE

INTRODUCTION

This bulletin is issued for the purpose of stimulating prospecting and development of possible sources of manganese in Nevada.

In the rush to do the big things in the war, some of the smaller, but no less vital, things are possibly overlooked. We do not realize the importance of the little that we can do. For example, the supplying of some of those rare or uncommon metals, which in ordinary times would not be necessary, at this time may become a vital factor for the successful conduct of the war. At this time, more than at any other time in our history, we need to develop our own natural resources and import nothing which can be produced from within our own borders. This will release for other service ships which are so much needed at this time. Production from our own resources, taken up as a war emergency measure, may develop new lines of industry for times after the war.

NEED OF MANGANESE

Manganese is one of these metals. It is absolutely essential for the production of high-grade steel. A recent statement of Secretary Franklin K. Lane of the Interior Department is to the effect that 50,000 tons of shipping is now necessary to supply the demands of the steel industry of this country with manganese, imported from Brazil, and that, could this shipping be released, it would be capable of carrying 300,000 tons of food and material annually to Europe.

MANGANESE DEPOSITS

Manganese ores occur in many parts of the United States, and in times past have been exploited to a certain extent. The deposits, however, are all small as compared with certain foreign ones and, due to several factors, have not been developed more extensively. Some of these limiting conditions have been: location of the markets in the East resulting in the need of paying high freight rates in comparison with the total value of the ore, uncertainty of payments after shipment, influence of the presence of certain impurities on the value of the ore, and high grade of ore demanded. These conditions have been greatly altered, due to the demand for manganese since the war started.

We can group our manganese deposits in three general classes:

- (1) High-grade manganese ore chiefly valuable for manganese;
- (2) Manganese silver ores; and
- (3) Manganese iron ores.

Most of the deposits in the United States are secondary and have originated by the concentration of manganese originally occurring in some other form, more widely distributed in adjoining rocks. In general, the deposits are of comparatively slight depth, often consist of lenses and pockets of good ore, but widely scattered over considerable territory, and therefore require careful study to determine their possibilities.

MANGANESE IN NEVADA

Nevada has not been formerly looked on as a promising State for manganese, but some good though small deposits have been found. At Golconda we have examples of the first class of deposits. Some very good ore has been found. These deposits have been described briefly

by E. C. Harder.* They are believed to consist of deposits formed from waters issuing from surrounding sedimentary rocks, and occur interstratified with silicious and calcareous tufa in a bedded deposit. At Pioche we have examples of the third class of deposits. A recent estimate of the Geological Survey places the probable ore in two Pioche deposits at 550,000 tons and possible ore at 1,000,000 tons, carrying approximately 12% manganese, 34% iron, 13% silica, and less than 0.1% phosphorus. While this type of ore has up to the present time been used only to a limited extent, more use may be made of it in the near future.

In view of the fact that little attention has been paid to this metal in the past, the extent of the mineralized sections of the State, and its common association with silver deposits, it is not unlikely that there may be many good deposits found here in Nevada. Recently very encouraging reports have come of new discoveries in different parts of the State, especially from near Las Vegas, Ely, and Golconda. The latest reports from Las Vegas indicate there are being shipped 60 tons daily with hopes of increasing this soon to 200 tons. Reports from Ely state they are making daily shipments of 20 to 25 tons and with improved transportation can increase this amount. If shipments of 220 tons daily could be maintained, they would have considerable influence on the general situation. In round figures they would total 80,000 tons yearly, and, as the estimated amount imported last year has been placed at about 500,000 tons, it is readily seen what an appreciable effect the Nevada supply would have.

The Mackay School of Mines has recently received from a number of different localities in the State very good samples of manganese ore. Attention should be directed first to securing ores of shipping grade without preliminary treatment. Some concentrating tests have been made to improve the grade of some of the low-grade silica-bearing ores with promising results. The Mackay School of Mines proposes to make further tests on this type of ore during the summer.

MANGANESE MINERALS

While there are many manganese minerals, there are only a very few commercially valuable. A few simple tests will serve to identify them. The oxides all have a dark color and streak; when fused with borax give an amethystine-colored bead; when fused with soda and niter give a greenish-colored bead; treated with hydrochloric acid give off chlorine gas.

The following are the chief minerals with a brief description of each:

Pyrolusite.

This mineral is sometimes called "black oxide of manganese." Its composition is manganese dioxide containing 63.2% metallic manganese. It is a soft black mineral having a metallic to dull luster; usually soft enough to soil the fingers; occurs massive, compact, stalactitic, and as crusts; its powder is black and its color black to steel-gray; gives an amethystine-colored bead when fused with borax; is soluble in hydrochloric acid liberating chlorine. It occurs in this State in several localities: Las Vegas, Ely, Golconda, and near Schurz.

Psilomelane.

This mineral does not have a definite composition, but the content of

*See "References" at end of this pamphlet.

manganese is usually high, not, however, as high as pyrolusite. In color it resembles pyrolusite, but is very much harder, being 4 to 5, while pyrolusite is 1 to 2.5; it is never crystallized; occurs as a smooth black massive mineral; it is infusible; generally yields water in a closed tube; gives reactions with hydrochloric acid and borax similar to pyrolusite. It is usually associated with pyrolusite, and in this State with rhodonite, as at Golconda.

Braunite.

This mineral is a manganese oxide of the composition Mn_2O_3 ; hardness of 6 to 6.5; submetallic luster; brownish-black to steel-gray color; gives reactions similar to pyrolusite with borax and hydrochloric acid.

Manganite.

This mineral is a hydrated form of the oxide, containing, when pure, 62.4% manganese; occurs as long and short prismatic crystals; has submetallic luster; steel-gray to black color; reddish-brown to black streak; gives with borax and hydrochloride acid reactions similar to pyrolusite.

Rhodo-chrosite.

This mineral is a carbonate, containing, when pure, 61.7% manganese; color rose-pink to brownish-red and brown; occurs massive, compact, and granular; hardness, 3.5 to 4.5; is transparent to opaque; brittle; is infusible, but changes dark-colored under the blowpipe; gives amethystine-colored bead with borax; is soluble in warm hydrochloric acid with effervescence; shows cleavage parallel to the rhombohedron. It is found in this State at Austin.

Rhodonite.

This mineral is the manganese silicate. The pure mineral would be of no value as a commercial ore, due to the presence of silica. It is generally rose-red to brownish-red in color; hardness, 5.5 to 6.5; gives an amethystine bead with borax. It is found in this State near Golconda.

Wad.

This mineral is a mixture of manganese oxides, together with the oxides of some other metals, notably copper, lead, and cobalt; color dark-brown or black; varies in hardness from 1 to 6; gives with fluxes the same reactions as pyrolusite and also often will give tests for lead, copper, and cobalt.

COMMERCIAL ORES

There are several factors which determine commercial or shipping ore. These factors are influenced by the use to which the ore is to be put. For example, a different grade is desired for use in making dry batteries than for making of ferromanganese for use in steel. Following are in general the limiting conditions which the manganese ore must fulfil for the steel industry:

1. The content in metallic manganese must run over 38%, and a higher unit-value is paid on ores as the content of manganese rises. It is preferred that the content of manganese run over 40%.

2. The silica content of the ore should run less than 8%, although ore containing as high as 12% will be accepted by some buyers and up to 15% by imposing certain penalties. These penalties are referred to

later in this report. Silica is objectionable, due to its tendency to produce a large volume of slag and also to carry manganese into the slag when smelted.

3. Phosphorus is not eliminated in smelting manganese ore, and is therefore limited to a very small amount in commercial ore. In general, the ore must contain less than 0.20% phosphorus.

4. Ore to be used in making ferromanganese must contain less than 8% iron. This is necessary in order to produce an alloy running 80% manganese. The lower the iron the more desirable the ore.

Some of the samples sent to the laboratory have shown on analysis up to 3% tungsten as the trioxide. Inquiry has been made regarding its possible influence on the value of the ore. With one exception, the replies indicate that, while it is not detrimental, neither is it thought that any return could be made for the contained tungsten. One dealer stated the tungsten would detract from the value of the ore for his purpose.

As some of the Nevada ore has shown sulphur in the form of both sodium and calcium sulphates, inquiry has been made as to the allowable amount of sulphur, and this has been fixed by one dealer at from 1 to 2% and the ore still be of value in steel manufacture.

CHEMICAL ORE

For use in making dry batteries, glass, and in the enameling industry the highest grade ore is required. It is then called "chemical ore." This type of ore commands a slightly higher price than "metallurgical ore." It must contain high manganese, preferably about 50% metallic manganese, less than $1\frac{1}{2}$ % iron, and less than 0.01% copper. Some ore of this grade has been found in Nevada, but in general the western ores contain too much iron or copper for this classification.

MANGANESE IN STEEL

Manganese, to become useful for the steel industry, must first be produced in the form of an iron-manganese alloy. If this alloy contains under 20% manganese, it is known as spiegeleisen; if it contains between 20 and 80%, it is known as ferromanganese. The higher grade alloy is demanded by the steel industry, and up to the present time the demand has been satisfied. In the attempt to use the manganese iron ores which occur in large amounts in this country, the lower grade alloy may come into more extended use.

Spiegeleisen is usually produced by smelting a manganese iron ore in the blast furnace. Lime is the principal flux. Silica is objectionable, owing to its tendency to produce a large volume of slag and at the same time carry away with it large amounts of manganese. Ferromanganese is produced by smelting a high-grade manganese ore in the blast furnace or in the electric furnace.

Manganese is used in steel for the following reasons:

First—To neutralize the harmful effects of sulphur by the formation of the less harmful sulphide of manganese.

Second—To remove oxygen from the steel and prevent thereby the formation of blowholes.

Third—To produce the special alloy steel known as manganese steel, used for implements or parts of machinery subject to great wear, as crushing surfaces of ore-crushers, parts of plows, rails for curves on street railways where subject to heavy use, and burglar-proof safes.

BUYERS OF MANGANESE ORE

In this State there is only one firm which will buy manganese ore—the Western Ore Purchasing Company of Reno. Other firms outside the State will purchase ores. In a recent bulletin issued by the United States Geological Survey a list of purchasers of manganese ore is given. This bulletin has been reprinted in the Engineering and Mining Journal of January 26, 1918. These firms will buy the following grades and classes:

- (1) 40% manganese ore, less than 2% iron.
- (2) 40% manganese ore, more than 2% iron.
- (3) 15 to 40% manganese ore.
- (4) 5 to 15% manganese ore.

Both of the classes 3 and 4 probably apply the usual restrictions on the per cent of silica and phosphorus given below.

SCHEDULE OF PRICES

To illustrate the present custom of purchasing and prices paid for manganese ores, it is necessary to give what is called a price schedule. The figures of any such price schedules are always subject to the ordinary weekly changes in the market prices. The latest quotations can be found in such weekly periodicals as the Engineering and Mining Journal and the Mining and Scientific Press.

The following is an approximate schedule of present prevailing prices for manganese ores ranging from 38 to 50% and above, in pure metallic manganese: From 90 cents to \$1.10 per unit of pure manganese of 22.4 pounds, found in a long ton of 2,240 pounds. These quotations are given f.o.b. eastern Pennsylvania points. They are based on the analysis of a sample dried at 212°F. Allowance is to be made, when making settlement, for moisture in the ore, as determined by drying a sample at the given temperature.

The following figures will illustrate the application of this price schedule: A unit is the same as 1% metallic manganese, thus a manganese ore assaying 1% manganese would contain one unit of manganese and, since we weigh such ore by the long ton of 2,240 pounds, it would be 1% of 2,240, or 22.4 pounds, as given above. A 50% ore would be one which contained 50 units of manganese. The price paid for a 50% ore being \$1.10 per unit would make the value of such an ore \$55 per long ton. Since a sliding schedule is used, a 38% would be figured as follows: 38% manganese indicates 38 units of manganese and in this case each unit is worth the lower figure stated above, or 90 cents; the value of such an ore would be 90 cents times 38 or \$34.20 per long ton. An ore assaying between 38 and 50% manganese will have a rate per unit ranging between 90 cents and \$1.10, according to the per cent of manganese present. Ore above 50% manganese will bear the \$1.10 rate.

Penalties: For each 1% silica in excess of 8% there will be a penalty assessed of 50 cents per gross ton. For each 0.01% of phosphorus in excess of 0.020% there will be a penalty assessed of 50 cents per gross ton.

Premium: For each 1% of silica under 8% there will be a premium paid of 50 cents per gross ton, provided the manganese content goes 38% or better.

Rejections: Ore containing more than 15% silica, or over 0.20%

phosphorus, or less than 38% manganese, is subject to refusal or rejection at the buyer's option.

It might be of interest to Nevada prospectors to know that the Western Ore Purchasing Company will sample and purchase manganese ores in less than carload lots, which will enable them to obtain money with which to develop their property without delay.

FREIGHT RATES

The following freight rates have been supplied by the Southern Pacific Company as in effect at this time, March 29, 1918. These rates are per ton of 2,000 pounds. It should be noted that manganese is usually purchased, however, on the long-ton basis of 2,240 pounds, and allowance should be made for this fact in estimating the value of ore in a given case:

Golconda to Hazen.....	Value \$50, \$1.45 per ton ; Value \$100, \$2.20 per ton
Reno to Hazen.....	Value \$50, \$0.60 per ton ; Value \$100, \$0.90 per ton
Schurz to Hazen.....	Value \$50, \$0.60 per ton ; Value \$100, \$0.90 per ton
Hazen to Pittsburg.....	No value stated, \$11.00 per ton
Hazen to Chicago.....	No value stated, \$9.00 per ton

EXAMINATION OF SAMPLES

Samples of supposed manganese ore will be examined and tested free at the Mackay School of Mines if the samples sent are from within Nevada and are taken by residents of this State.

The School will gladly furnish further information on this subject to any person desiring the same.

The School will also appreciate any information regarding manganese deposits in this State, names of shippers or possible shippers, and any local problems in connection with increasing present shipments.

REFERENCES

"Manganese Deposits of the United States with Sections on Foreign Deposits, Chemistry, and Uses" (U. S. Geological Survey Bulletin No. 427, by E. C. Harder) is the best and most concise reference on the subject up to 1910.

"The Mineral Industry," issued annually by McGraw-Hill & Co., and "The Mineral Resources," issued annually by the U. S. Geological Survey, will bring the subject up to date.

"Metallurgy of Iron and Steel," by Bradley Stoughton, formerly a Professor of Metallurgy in Columbia School of Mines, and now the Secretary of the American Institute of Mining Engineers, is a good reference on the use of manganese in steel.

"Prospecting for Manganese," by Henry V. Maxwell, is a short interesting article appearing in the Engineering and Mining Journal for February 9, 1918.

In the September (1917) Bulletin of the American Institute of Mining Engineering is found a review of the New York Section's War Meeting on Manganese. This account gives the best present review of the subject as influenced by war conditions.

Bulletins have already been issued along similar lines to this by the State Mineralogist of California, and the Colorado School of Mines.

NEVADA TAX COMMISSION

BULLETIN NO. 19

Assessment of Railroad and Public Utilities for 1918

CARSON CITY, NEVADA,

May 15, 1918.

To County Assessors:

The following resolution was unanimously adopted by the Nevada Tax Commission at a meeting held in Carson City this date:

WHEREAS, A public hearing beginning on the second Monday in January, 1918, having been held and continued from day to day, and all parties interested having been heard or afforded full opportunity to be heard, either in person or by their agents or attorneys, as provided in section 5, chapter 177, Statutes of Nevada, 1917; and the Nevada Tax Commission having fully considered every element, and fairly weighed all evidence placed before it by which assessment valuations shall be established by the said Commission on the several kinds and classes of property mentioned in section 5 of said Act; therefore, be it

Resolved, That the following valuations within Nevada, including all elements named in section 5 of said Act, are hereby established for the several interstate and intercounty railroad and public utility companies enumerated herein, for assessment and taxation purposes for the State, counties, municipalities, and towns, for the year 1918:

The following valuations within Nevada for the several intracounty railroad and public utility companies, enumerated herein, are supplied the Assessor for his use, having been compiled by the Nevada Tax Commission for 1918 on the same uniform basis as the interstate and intercounty valuations of railroad and public utility companies over the assessment of which the Nevada Tax Commission has original jurisdiction:

INTERSTATE AND INTERCOUNTY RAILROAD ASSESSMENT FOR 1918

CENTRAL PACIFIC RAILWAY—MAIN LINE

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Washoe	35.20	76.69	\$4,282,227	\$3,854,004	\$3,425,782
Storey	10.32	12.63	705,286	634,712	564,188
Lyon	12.06	17.27	964,325	867,898	771,460
Churchill	40.78	66.96	3,180,540	2,862,486	2,544,432
Humboldt	140.16	189.98	10,608,180	9,547,817	8,486,504
Lander	28.49	34.02	1,899,613	1,709,662	1,519,691
Eureka	34.63	46.00	2,568,564	2,311,699	2,064,843
Elko	141.31	201.07	11,227,375	10,104,637	8,981,900
Totals	442.96	634.62	\$35,436,000	\$31,892,400	\$28,348,800

Full cash value per mile main track	\$80,000.00
Full cash value per mile all track	55,838.14
90% full cash value per mile main track	72,000.00
Assessed value per mile all track	50,254.33
Assessed 1917 per mile main track	64,000.00
Assessed 1917 per mile all track	44,670.51

CENTRAL PACIFIC RAILWAY—TECOMA BRANCH

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Elko	4.029	4.029	\$60,435	\$54,392	\$48,348
Full cash value per mile main track.....					\$15,000.00
Full cash value per mile all track.....					15,000.00
90% full cash value per mile main track.....					13,500.00
Assessed value per mile all track.....					13,500.00
Assessed 1917 per mile main track.....					12,000.00
Assessed 1917 per mile all track.....					12,000.00

CENTRAL PACIFIC RAILWAY—METROPOLIS BRANCH

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Elko	7.85	8.82	\$117,750	\$105,975	\$94,200
Full cash value per mile main track.....					\$15,000.00
Full cash value per mile all track.....					13,350.34
90% full cash value per mile main track.....					13,500.00
Assessed value per mile all track.....					12,015.31
Assessed 1917 per mile main track.....					12,000.00
Assessed 1917 per mile all track.....					10,680.27

CENTRAL PACIFIC RAILWAY—FERNLEY-LASSEN BRANCH

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Washoe	65.06	72.61	\$1,529,629	\$1,376,666	\$1,223,703
Lyon	2.20	2.42	50,981	46,883	40,785
Totals	67.26	75.03	\$1,580,610	\$1,422,549	\$1,264,488
Full cash value per mile main track.....					\$23,500.00
Full cash value per mile all track.....					21,066.37
90% full cash value per mile main track.....					21,160.00
Assessed value per mile all track.....					18,959.73
Assessed 1917 per mile main track.....					18,800.00
Assessed 1917 per mile all track.....					16,853.09

CENTRAL PACIFIC RAILWAY—FALLON BRANCH

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Churchill	15.90	20.68	\$270,300	\$243,270	\$216,240
Full cash value per mile main track.....					\$17,000.00
Full cash value per mile all track.....					13,102.30
90% full cash value per mile main track.....					15,800.00
Assessed value per mile all track.....					11,792.07
Assessed 1917 per mile main track.....					13,600.00
Assessed 1917 per mile all track.....					10,481.84

CENTRAL PACIFIC RAILWAY—NEVADA-CALIFORNIA BRANCH (BROAD-GAGE)

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Churchill	10.62	12.32	\$326,762	\$294,077	\$261,401
Lyon	69.04	76.63	2,029,736	1,826,762	1,623,789
Mineral	84.22	96.62	2,569,912	2,303,921	2,047,930
Totals	163.88	185.57	\$4,916,400	\$4,424,760	\$3,933,120
Full cash value per mile main track.....					\$30,000.00
Full cash value per mile all track.....					26,522.10
90% full cash value per mile main track.....					27,000.00
Assessed value per mile all track.....					23,869.89
Assessed 1917 per mile main track.....					24,000.00
Assessed 1917 per mile all track.....					21,217.68

CENTRAL PACIFIC RAILWAY—NEVADA—CALIFORNIA BRANCH (NARROW-GAGE)

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Mineral	42.91	49.84	\$643,650	\$579,285	\$514,920
Full cash value per mile main track.....					
Full cash value per mile all track.....					
90% full cash value per mile main track.....					
Assessed value per mile all track.....					
Assessed 1917 per mile main track.....					
Assessed 1917 per mile all track.....					

RECAPITULATION—CENTRAL PACIFIC RAILWAY*

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Washoe—Main line	35.20	76.69	\$4,282,227	\$3,854,004	\$3,425,782
Fernley-Lassen branch	65.06	72.61	1,529,629	1,376,666	1,223,703
Washoe—Totals	100.26	149.30	\$5,811,856	\$5,230,670	\$4,649,485
Storey—Main line	10.32	12.63	\$705,236	\$634,712	\$564,188
Lyon—Main line	12.06	17.27	\$964,325	\$867,893	\$771,460
Nev.-Cal. br.—b.-gage	69.04	76.53	2,029,736	1,826,762	1,623,789
Fernley-Lassen branch	2.20	2.42	50,981	45,883	40,785
Lyon—Totals	83.30	96.22	\$3,045,042	\$2,740,538	\$2,436,034
Churchill—Main line	40.78	56.96	\$3,180,540	\$2,862,486	\$2,544,432
Nev.-Cal. br.—b.-gage	10.62	12.32	326,752	294,077	261,401
Fallon branch	15.90	20.63	270,900	243,270	216,240
Churchill—Totals	67.30	89.91	\$3,777,592	\$3,399,833	\$3,022,073
Humboldt—Main line	140.16	189.98	\$10,608,130	\$9,547,317	\$8,486,504
Lander—Main line	28.49	34.02	\$1,899,613	\$1,709,662	\$1,519,691
Eureka—Main line	34.63	46.00	\$2,568,554	\$2,311,699	\$2,054,843
Elko—Main line	141.31	201.07	\$11,227,375	\$10,104,637	\$8,981,900
Tecoma branch	4.029	4.029	60,435	54,392	48,348
Metropolis branch	7.85	8.82	117,750	106,975	94,200
Elko—Totals	153.189	213.919	\$11,405,560	\$10,265,004	\$9,124,448
Mineral—					
Nev.-Cal. br.—b.-gage	84.22	96.52	\$2,559,912	\$2,303,921	\$2,047,930
Nev.-Cal. br.—n.-gage	42.91	49.84	643,650	579,285	514,920
Mineral—Totals	127.13	146.36	\$3,203,562	\$2,883,206	\$2,562,850
Grand totals	744.779	978.339	\$43,025,145	\$38,722,631	\$34,420,116

Full cash value per mile main track.....	\$57,769.00
Full cash value per mile all track.....	43,977.74
90% full cash value per mile main track.....	51,992.10
Assessed value per mile all track.....	39,579.97
Assessed 1917 per mile main track.....	46,216.20
Assessed 1917 per mile all track.....	36,182.19

*Company cited to appear before Tax Commission meeting in October, 1918, to show cause why above valuations should not be increased.

TONOPAH AND GOLDFIELD RAILROAD

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Nye	1.117	4.071	\$68,763	\$61,887	\$62.56
Esmeralda	87.196	101.882	1,720,542	1,548,488	1,561,517
Mineral	6.750	7.286	123,067	110,760	111.83
Totals	95.063	113.219	\$1,912,372	\$1,721,135	\$1,736.00

Full cash value per mile main track.....	\$20,119.01
Full cash value per mile all track.....	16,890.91
90% full cash value per mile main track.....	18,107.11
Assessed value per mile all track.....	15,201.82
Assessed 1917 per mile main track.....	18,263.50
Assessed 1917 per mile all track.....	15,363.50

NEVADA NORTHERN RAILWAY—MAIN LINE (Ely to Cobre)

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Elko	74.40	78.65	\$1,901,309	\$1,711,178	\$1,489,433
White Pine	69.286	79.85	1,990,318	1,737,286	1,505,340
Totals	143.686	158.50	\$3,831,627	\$3,448,464	\$2,994.773

Full cash value per mile main track.....	\$26,666.67
Full cash value per mile all track.....	24,174.30
90% full cash value per mile main track.....	24,000.00
Assessed value per mile all track.....	21,756.87
Assessed 1917 per mile main track.....	21,333.33
Assessed 1917 per mile all track.....	18,937.48

NEVADA NORTHERN RAILWAY—MINES-SMELTER BRANCH

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
White Pine	24.20	37.40	\$1,210,000	\$1,089,000	\$853.200

Full cash value per mile main track.....	\$50,000.00
Full cash value per mile all track.....	32,352.94
90% full cash value per mile main track.....	45,000.00
Assessed value per mile all track.....	29,117.65
Assessed 1917 per mile main track.....	40,000.00
Assessed 1917 per mile all track.....	26,662.50

RECAPITULATION—NEVADA NORTHERN RAILWAY*

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
White Pine—Main line	69.286	79.85	\$1,990,318	\$1,737,286	\$1,505,340
Mines-Smelter branch	24.20	37.40	1,210,000	1,089,000	853.200
Totals—White Pine	93.486	117.25	\$3,140,318	\$2,826,286	\$2,358.540
Elko—Main line	74.40	78.65	\$1,901,309	\$1,711,178	\$1,489,433
Grand totals	167.886	195.90	\$5,041,627	\$4,537,464	\$3,847.973

Full cash value per mile main track.....	\$30,030.06
Full cash value per mile all track.....	25,735.71
90% full cash value per mile main track.....	27,027.05
Assessed value per mile all track.....	23,162.14
Assessed 1917 per mile main track.....	23,795.52
Assessed 1917 per mile all track.....	20,237.58

*Company cited to appear before Tax Commission meeting in October, 1918, to show cause why above valuations should not be increased.

LOS ANGELES AND SALT LAKE RAILROAD—MAIN LINE

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Clark.....	107.23	135.71	\$5,451,087	\$4,905,980	\$4,302,590
Lincoln.....	106.35	123.91	5,177,983	4,660,140	4,102,210
Totals.....	212.58	259.62	\$10,629,000	\$9,566,100	\$8,404,800

Full cash value per mile main track.....	\$50,000.00
Full cash value per mile all track.....	40,167.08
90% full cash value per mile main track.....	45,000.00
Assessed value per mile all track.....	36,150.33
Assessed 1917 per mile main track.....	40,000.00
Assessed 1917 per mile all track.....	32,061.03

LOS ANGELES AND SALT LAKE RAILROAD—ST. THOMAS BRANCH

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Clark.....	21.64	24.22	\$324,600	\$292,140	\$259,200

Full cash value per mile main track.....	\$15,000.00
Full cash value per mile all track.....	13,402.15
90% full cash value per mile main track.....	13,500.00
Assessed value per mile all track.....	12,061.94
Assessed 1917 per mile main track.....	12,000.00
Assessed 1917 per mile all track.....	12,000.00

LOS ANGELES AND SALT LAKE RAILROAD—CALIENTE AND PIOCHE BRANCH

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Lincoln.....	32.72	35.34	\$490,800	\$441,720	\$388,800

Full cash value per mile main track.....	\$15,000.00
Full cash value per mile all track.....	13,887.95
90% full cash value per mile main track.....	13,500.00
Assessed value per mile all track.....	12,499.16
Assessed 1917 per mile main track.....	12,000.00
Assessed 1917 per mile all track.....	11,421.86

RECAPITULATION—LOS ANGELES AND SALT LAKE RAILROAD

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Clark—Main line.....	107.23	135.71	\$5,451,087	\$4,905,980	\$4,302,590
St. Thomas branch.....	21.64	24.22	324,600	292,140	259,200
Clark—Totals.....	128.87	159.93	\$5,775,687	\$5,198,100	\$4,561,790
Lincoln—Main line.....	106.35	123.91	\$5,177,983	\$4,660,140	\$4,102,210
C. and P. branch.....	32.72	35.34	490,800	441,720	388,800
Lincoln—Totals.....	138.07	164.25	\$5,668,733	\$5,101,860	\$4,491,010
Grand totals.....	266.94	324.18	\$11,444,400	\$10,299,960	\$9,052,800

Full cash value per mile main track.....	\$42,872.55
Full cash value per mile all track.....	35,302.60
90% full cash value per mile main track.....	38,585.30
Assessed value per mile all track.....	31,772.34
Assessed 1917 per mile main track.....	34,275.34
Assessed 1917 per mile all track.....	28,489.88

TONOPAH AND TIDEWATER RAILROAD

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Nye	29.47	29.98	\$142,300	\$128,070	\$113,840

Full cash value per mile main track.....	\$4,828.64
Full cash value per mile all track.....	4,746.50
90% of full cash value per mile main track.....	4,346.78
Assessed value per mile all track.....	4,271.85
Assessed 1917 per mile main track.....	3,862.91
Assessed 1917 per mile all track.....	3,797.20

BULLFROG AND GOLDFIELD RAILROAD

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Nye	73.65	75.55	\$339,000	\$306,100	\$287,182
Esmeralda	5.30	8.98	40,295	36,286	31,705
Totals	78.95	84.53	\$379,295	\$341,386	\$318,887

Full cash value per mile main track.....	\$4,804.25
Full cash value per mile all track.....	4,487.10
90% full cash value per mile main track.....	4,323.83
Assessed value per mile all track.....	4,088.39
Assessed 1917 per mile main track.....	3,843.40
Assessed 1917 per mile all track.....	3,530.64

LAS VEGAS AND TONOPAH RAILROAD

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Nye	65.04	69.69	\$331,109	\$297,998	\$265,614
Clark	52.39	53.89	256,041	230,437	204,866
Totals	117.43	123.58	\$587,150	\$528,435	\$470,480

Full cash value per mile main track.....	\$5,000.00
Full cash value per mile all track.....	4,751.17
90% full cash value per mile main track.....	4,500.00
Assessed value per mile all track.....	4,276.05
Assessed 1917 per mile main track.....	4,000.00
Assessed 1917 per mile all track.....	3,801.55

VIRGINIA AND TRUCKEE RAILWAY—MAIN LINE

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Washoe	25.65	27.73	\$356,517	\$320,865	\$285,213
Ormsby	13.29	20.63	265,234	238,711	212,188
Lyon	6.47	8.38	107,739	96,965	86,191
Storey	6.34	10.54	135,510	121,959	108,408
Totals	51.75	67.28	\$865,000	\$778,500	\$692,000

Full cash value per mile main track.....	\$16,714.98
Full cash value per mile all track.....	12,856.72
90% full cash value per mile main track.....	15,043.48
Assessed value per mile all track.....	11,571.06
Assessed 1917 per mile main track.....	13,371.98
Assessed 1917 per mile all track.....	10,285.38

VIRGINIA AND TRUCKEE RAILWAY—MINDEN BRANCH

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Ormsby	4.05	4.91	\$37,260	\$33,534	\$29,808
Douglas	11.20	12.88	97,740	87,966	78,192
Totals	15.25	17.79	\$135,000	\$121,500	\$108,000

Full cash value per mile main track.....	\$8,852.46
Full cash value per mile all track.....	7,588.53
90% full cash value per mile main track.....	7,967.21
Assessed value per mile all track.....	6,829.68
Assessed 1917 per mile main track.....	7,081.67
Assessed 1917 per mile all track.....	6,070.82

RECAPITULATION—VIRGINIA AND TRUCKEE RAILWAY

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Washoe—Main line.....	25.65	27.73	\$356,517	\$320,865	\$285,213
Ormsby—Main line.....	13.29	20.63	\$265,234	\$238,711	\$212,188
Minden branch.....	4.05	4.91	37,260	33,534	29,808
Ormsby—Totals.....	17.34	25.54	\$302,494	\$272,245	\$241,996
Lyon—Main line.....	6.47	8.38	\$107,739	\$96,965	\$86,191
Storey—Main line.....	6.34	10.54	\$135,510	\$121,969	\$108,408
Douglas—Minden branch.....	11.20	12.88	\$97,740	\$87,966	\$78,192
Grand totals.....	67.00	85.07	\$1,000,000	\$900,000	\$800,000

Full cash value per mile main track.....	\$14,925.87
Full cash value per mile all track.....	11,755.03
90% full cash value per mile main track.....	13,432.83
Assessed value per mile all track.....	10,579.53
Assessed 1917 per mile main track.....	11,940.80
Assessed 1917 per mile all track.....	9,404.02

ATCHISON, TOPEKA AND SANTA FE RAILWAY

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Clark	11.60	12.59	\$67,667	\$60,900	\$54,134

Full cash value per mile main track.....	\$5,833.33
Full cash value per mile all track.....	5,374.66
90% full cash value per mile main track.....	5,250.00
Assessed value per mile all track.....	4,837.19
Assessed 1917 per mile main track.....	4,666.66
Assessed 1917 per mile all track.....	4,299.72

WESTERN PACIFIC RAILWAY—MAIN LINE

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Washoe	62.61	68.95	\$1,974,488	\$1,777,039	\$1,480,835
Humboldt	139.81	156.13	4,471,020	4,023,918	3,353,194
Lander	25.03	26.71	764,881	688,393	573,650
Eureka	33.08	36.20	1,086,642	932,978	777,680
Elko	166.70	189.42	5,424,329	4,881,896	4,068,161
Totals	427.23	477.41	\$13,671,360	\$12,304,224	\$10,253,520

Full cash value per mile main track.....	\$32,000.00
Full cash value per mile all track.....	28,686.52
90% full cash value per mile main track.....	28,800.00
Assessed value per mile all track.....	25,772.87
Assessed 1917 per mile main track.....	24,000.00
Assessed 1917 per mile all track.....	21,476.94

WESTERN PACIFIC RAILWAY—RENO BRANCH

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Washoe	21.97	24.28	\$659,100	\$583,190	(*)

Full cash value per mile main track.....	\$30,000.00
Full cash value per mile all track.....	27,145.80
90% full cash value per mile main track.....	27,000.00
Assessed value per mile all track.....	24,431.22
Assessed 1917 per mile main track.....	
Assessed 1917 per mile all track.....	

RECAPITULATION—WESTERN PACIFIC RAILWAY

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Washoe—Main line.....	62.61	68.95	\$1,974,488	\$1,777,039	\$1,480,835
Reno branch	21.97	24.28	659,100	583,190	(*)
Totals—Washoe.....	84.58	93.23	\$2,633,588	\$2,370,229	\$1,480,835
Humboldt	139.81	156.13	\$4,471,020	\$4,023,918	\$3,353,194
Lander	25.03	26.71	\$764,881	\$688,393	\$573,650
Eureka	33.08	36.20	\$1,086,642	\$932,978	\$777,680
Elko	166.70	189.42	\$5,424,329	\$4,881,896	\$4,068,161
Grand totals.....	449.20	501.69	\$14,330,460	\$12,897,414	\$10,253,520

Full cash value per mile main track.....	\$31,902.18
Full cash value per mile all track.....	28,564.37
90% full cash value per mile main track.....	28,711.96
Assessed value per mile all track.....	25,707.93
Assessed 1917 per mile main track.....	24,000.00
Assessed 1917 per mile all track.....	21,476.94

*No assessment in 1917.

RECAPITULATION OF INTERSTATE AND INTERCOUNTY RAILROAD ASSESSMENT FOR 1918

Name of railroad	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Central Pacific Railway	744.770	978.339	\$43,025,145	\$38,722,631	\$34,420,116
Tonopah and Goldfield Railroad	95.053	113.219	1,912,372	1,721,135	1,726,000
Nevada Northern Railway	167.885	196.90	5,041,627	4,537,464	3,847,973
Los Angeles and Salt Lake Railroad	266.94	324.18	11,444,400	10,299,960	9,032,800
Tonopah and Tidewater Railroad	29.47	29.98	142,300	122,070	113,840
Bullfrog and Goldfield Railroad	78.95	84.53	379,296	341,365	318,887
Las Vegas and Tonopah Railroad	117.43	123.58	537,150	528,435	470,480
Virginia and Truckee Railway	67.00	86.07	1,000,000	900,000	800,000
Atchison, Topeka and Santa Fe Railway	11.80	12.59	67,667	60,900	54,134
Western Pacific Railway	449.20	501.69	14,380,460	12,897,414	10,283,680
Totals	2,028.308	2,449.078	\$77,980,416	\$70,137,374	\$61,067,750

INTRACOUNTY RAILROAD ASSESSMENT FOR 1918

EUREKA-NEVADA RAILWAY

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Eureka.....	85.60	88.10	\$161,194	\$145,075	\$132,571
Full cash value per mile main track.....					\$1,863.11
Full cash value per mile all track.....					1,829.67
90% full cash value per mile main track.....					1,694.80
Assessed value per mile all track.....					1,646.70
Assessed 1917 per mile main track.....					1,506.49
Assessed 1917 per mile all track.....					1,464.87

NEVADA CENTRAL RAILROAD

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Lander.....	93.00	95.00	\$125,000	\$112,500	\$100,000
Full cash value per mile main track.....					\$1,344.09
Full cash value per mile all track.....					1,315.79
90% full cash value per mile main track.....					1,209.68
Assessed value per mile all track.....					1,184.21
Assessed 1917 per mile main track.....					1,075.27
Assessed 1917 per mile all track.....					1,052.61

SILVER PEAK RAILROAD

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Emeralda.....	17.50	19.00	\$47,112	\$42,400	\$37,690
Full cash value per mile main track.....					\$2,692.11
Full cash value per mile all track.....					2,479.58
90% full cash value per mile main track.....					2,422.90
Assessed value per mile all track.....					2,231.62
Assessed 1917 per mile main track.....					2,153.69
Assessed 1917 per mile all track.....					1,983.66

NEVADA COPPER BELT RAILROAD

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Lyon.....	41.47	44.47	\$250,000	\$225,000	\$200,000
Full cash value per mile main track.....					\$6,028.45
Full cash value per mile all track.....					5,621.77
90% full cash value per mile main track.....					5,425.15
Assessed value per mile all track.....					5,059.59
Assessed 1917 per mile main track.....					4,822.76
Assessed 1917 per mile all track.....					4,497.42

PIOCHE-PACIFIC RAILROAD

County	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Lincoln.....	15.00	17.50	\$25,000	\$22,500	\$20,000
Full cash value per mile main track.....					\$1,666.67
Full cash value per mile all track.....					1,428.57
90% full cash value per mile main track.....					1,500.00
Assessed value per mile all track.....					1,285.71
Assessed 1917 per mile main track.....					1,333.34
Assessed 1917 per mile all track.....					1,142.85

RECAPITULATION OF INTRACOUNTY RAILROAD ASSESSMENT FOR 1918

Name of railroad	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Eureka-Nevada Railway	85.60	88.10	\$161,194.00	\$145,075.00	\$132,571.00
Nevada Central Railroad	98.00	98.00	125,000.00	112,500.00	100,000.00
Silver Peak Railroad	17.50	19.00	47,112.00	43,400.00	37,690.00
Nevada Copper Belt Railroad	41.47	44.47	250,000.00	225,000.00	200,000.00
Pioche-Pacific Railroad	15.00	17.50	25,000.00	22,500.00	20,000.00
Totals	292.57	294.07	\$608,306.00	\$547,475.00	\$490,261.00

RECAPITULATION OF INTERCOUNTY AND INTERSTATE RAILROAD ASSESSMENT FOR 1918 AND INTRACOUNTY RAILROAD ASSESSMENT FOR 1918

Class	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Intercounty and interstate	2,029.306	2,449.078	\$77,880,416.00	\$70,137,374.00	\$61,067,750.00
Intracounty	292.57	294.07	608,306.00	547,475.00	490,261.00
Totals	2,290.878	2,713.148	\$78,488,722.00	\$70,684,849.00	\$61,558,011.00

INTERSTATE AND INTERCOUNTY PUBLIC UTILITIES ASSESSMENT FOR 1918 **Private Car-Line Companies**

Name of company	County	Mileage operated	Full cash value	Assessed 1918	Assessed 1917
American Cotton Oil Company, 27 Beaver Street, New York City	Churehill	67.30	\$33.00	\$30.00	(*)
	Clark	123.87	64.00	58.00	
	Elko	319.889	153.00	141.00	
	Eureka	67.71	34.00	31.00	
	Humboldt	279.97	139.00	124.00	
	Lander	53.52	27.00	24.00	
	Lincoln	133.07	69.00	62.00	
	Lyon	83.30	41.00	37.00	
	Mineral	127.13	63.00	57.00	
	Storey	10.32	5.00	5.00	
	Washoe	162.87	81.00	76.00	
Totals		1,438.949	\$714.00	\$642.00	
American Refrigerator Transit Co., Railway Exchange Building, St. Louis, Missouri	Churehill	67.30	\$170.00	\$153.00	\$38.45
	Clark	123.87	323.00	293.00	238.11
	Elko	394.289	996.00	896.00	412.78
	Emeralda	92.488	234.00	211.00	116.09
	Eureka	67.71	172.00	155.00	88.99
	Humboldt	279.97	707.00	636.00	368.14
	Lander	53.52	122.00	122.00	70.34
	Lincoln	133.07	349.00	314.00	177.90
	Lyon	83.30	210.00	189.00	109.48
	Mineral	133.88	338.00	304.00	176.86
	Nye	74.767	139.00	170.00	87.96
	Storey	10.32	26.00	23.00	13.56
	Washoe	162.87	412.00	372.00	214.07
	White Pine	93.486	236.00	212.00	
Totals		1,780.888	\$4,500.00	\$4,050.00	\$2,161.73
American Linsed Co., Twenty-Second and Lumber Street, Chicago, Illinois	Churehill	67.30	\$406.00	\$366.00	\$112.00
	Clark	None	None	None	213.66
	Elko	319.889	1,929.00	1,736.00	521.00
	Eureka	67.71	408.00	368.00	112.00
	Humboldt	279.97	1,688.00	1,519.00	446.00
	Lander	53.52	323.00	292.00	89.00
	Lincoln	None	None	None	224.58
	Lyon	83.30	502.00	450.00	138.00

Associated Oil Co., Sharon Building, San Francisco, California	Mineral	127.11	787.00	690.00	211.00
	Survey	188.87	68.00	87.00	17.00
Totals	Waaboo	188.87	955.00	774.00	170.00
		1,172.009	87,098.00	84,361.00	82,878.08
California Dispatch Line	Churchill	67.30	8242.00	3218.00	\$401.84
	Clark	128.87	443.00	418.00	1,346.82
	Douglas	11.20	40.00	38.00	88.48
	Elko	394.289	1,417.00	1,278.00	1,140.38
	Emeralda	87.196	318.00	282.00	657.88
	Eureka	67.71	243.00	219.00	288.08
	Humboldt	279.97	1,007.00	908.00	1,043.82
	Lander	53.52	192.00	173.00	312.19
	Lincoln	188.07	496.00	446.00	1,008.00
	Lyon	89.77	823.00	292.00	668.80
	Mineral	183.88	482.00	434.00	996.32
	Nye	1.117	4.00	3.00	498.50
	Ormsby	17.34	63.00	57.00	129.15
	Storey	16.66	61.00	56.00	124.06
	Waaboo	188.82	678.00	610.00	887.64
	White Pine	98.486	336.00	302.00	
	Totals	1,708.898	86,360.00	\$5,724.00	89,615.28
Cudahy Packing Co., 111 W. Monroe Street, Chicago, Illinois	Churchill	67.30	894.00	835.00	(*)
	Clark	319.889	449.00	404.00	
	Elko	67.71	96.00	86.00	
	Eureka	279.97	393.00	354.00	
	Humboldt	53.52	76.00	68.00	
	Lander	88.30	117.00	105.00	
	Lyon	127.13	179.00	160.00	
	Mineral	10.32	14.00	13.00	
	Storey	162.87	223.00	205.00	
	Waaboo				
	Totals	1,172.009	\$1,644.00	\$1,480.00	
No assessment in 1917.	Churchill	67.30	850.00	845.00	\$40.10
	Clark	128.87	97.00	87.00	76.89
	Elko	319.889	240.00	216.00	187.04
	Eureka	67.71	61.00	46.00	40.35
	Humboldt	279.97	210.00	190.00	166.75
	Lander	53.52	40.00	36.00	31.84
	Lyon	188.07	104.00	98.00	80.86
	Lincoln	83.30	63.00	57.00	49.61
	Mineral	127.13	96.00	86.00	78.78
	Storey	10.32	8.00	7.00	6.14
	Waaboo	162.87	122.00	110.00	97.06
	Totals	1,486.949	\$1,080.00	\$972.00	\$882.00

*No assessment in 1917.

PRIVATE CAR-LINE COMPANIES—Continued

Name of company	County	Mileage	Full cash value	Assessed 1917	Assessed 1916
Fruit Growers Express Co., Union Stock Yards, Chicago, Illinois					(*)
	Churchill	67.30	\$4,064.00	\$3,649.00	
	Clark	128.87	7,764.00	6,988.00	
	Douglas	11.20	675.00	608.00	
	Elko	319.889	19,270.00	17,343.00	
	Eureka	67.71	4,079.00	3,671.00	
	Humboldt	279.97	16,866.00	15,179.00	
	Lander	53.52	3,225.00	2,903.00	
	Lincoln	138.07	8,317.00	7,495.00	
	Lyon	89.77	5,407.00	4,866.00	
	Mineral	127.13	7,658.00	6,892.00	
	Ormsby	17.34	1,045.00	940.00	
	Storey	16.66	1,004.00	904.00	
	Washoe	188.52	11,356.00	10,220.00	
Totals		1,505.949	\$80,720.00	\$81,645.00	
General American Tank Car Co., Harris Trust Building, Chicago, Illinois					(*)
	Churchill	67.30	\$309.00	\$278.00	
	Douglas	11.20	51.00	46.00	
	Elko	319.889	1,468.00	1,321.00	
	Eureka	67.71	310.00	279.00	
	Humboldt	279.97	1,287.00	1,168.00	
	Lander	53.52	246.00	221.00	
	Lyon	89.77	412.00	371.00	
	Mineral	127.13	583.00	525.00	
	Ormsby	17.34	81.00	73.00	
	Storey	16.66	76.00	68.00	
	Washoe	188.52	865.00	779.00	
Totals		1,239.009	\$5,688.00	\$5,119.00	
Kingan Refrigerator Line, Indianapolis, Indiana					(*)
	Churchill	67.30	\$172.00	\$156.00	
	Elko	163.189	396.00	356.00	
	Eureka	34.63	89.00	80.00	
	Humboldt	140.16	361.00	325.00	
	Lander	28.49	74.00	67.00	
	Lyon	83.30	218.00	194.00	
	Mineral	127.13	328.00	296.00	
	Storey	10.32	27.00	24.00	
	Washoe	100.26	258.00	232.00	
Totals		744.779	\$1,920.00	\$1,728.00	

Live Poultry Transit Co., 1306 Fisher Building, Chicago, Illinois

Churchill	87.10	884.00	811.00	848.87
Elko	919.1880	104.00	None	108.70
Eureka	67.71	40.00	148.00	325.40
Lander	279.87	148.00	32.00	64.40
Lincoln	83.82	27.00	128.00	251.00
Lyon	None	None	24.00	48.78
Mineral	83.80	48.00	None	107.98
Storey	127.18	66.00	89.00	88.44
Washoe	10.82	6.00	50.00	101.89
	162.87	84.00	4.00	8.22
Totals	1,172.009	\$800.00	\$540.00	\$1,141.44

March Refrigerator Service Co., Station C, Milwaukee, Wisconsin

Churchill	67.30	\$68.00	\$61.00	\$29.14
Clark	181.26	184.00	166.00	78.58
Elko	394.289	400.00	360.00	168.40
Emerald	92.486	94.00	86.00	40.58
Eureka	67.71	68.00	62.00	29.35
Humboldt	279.97	284.00	255.00	121.35
Lander	53.52	54.00	49.00	24.20
Lincoln	138.07	126.00	126.00	59.89
Lyon	83.30	85.00	76.00	36.10
Mineral	133.88	138.00	122.00	58.04
Nye	169.277	172.00	158.00	76.08
Storey	10.82	10.00	9.00	4.46
Washoe	162.87	165.00	149.00	70.61
White Pine	93.486	95.00	85.00	39.31
Totals	1,927.738	\$1,956.00	\$1,760.00	\$833.87

Pacific Fruit Express, 65 Market Street, San Francisco, California

Churchill	67.30	\$12,757.00	\$11,481.00	\$13,600.00
Clark	181.26	34,360.00	30,924.00	36,600.00
Douglas	11.20	2,123.00	1,911.00	2,300.00
Elko	394.289	74,742.00	67,268.00	78,400.00
Emerald	92.486	17,632.00	15,779.00	18,900.00
Eureka	67.71	12,836.00	11,632.00	13,700.00
Humboldt	279.97	53,071.00	47,764.00	56,500.00
Lander	53.52	10,145.00	9,131.00	10,800.00
Lincoln	138.07	26,173.00	23,555.00	27,300.00
Lyon	131.24	24,878.00	22,390.00	26,500.00
Mineral	133.88	25,378.00	22,840.00	27,000.00
Nye	139.807	26,502.00	23,852.00	29,700.00
Ormsby	17.34	3,258.00	2,969.00	3,500.00
Storey	16.66	3,158.00	2,842.00	3,400.00
Washoe	188.52	36,736.00	32,162.00	38,100.00
White Pine	93.486	17,722.00	15,950.00	18,300.00
Totals	2,006.738	\$380,400.00	\$342,360.00	\$399,600.00

*No assessment in 1917.

PRIVATE CAR-LINE COMPANIES—Continued

Name of company	County	Mileage	Full cash value	Assessed 1918	Assessed 1917
Pennsylvania Tank Line, Sharon, Pennsylvania.					
Churchill	Churchill	67.30	\$165.00	\$149.00	(*)
Elko	Elko	319.889	798.00	707.00	
Eureka	Eureka	67.71	166.00	149.00	
Humboldt	Humboldt	279.97	688.00	619.00	
Lander	Lander	53.52	132.00	119.00	
Lyon	Lyon	53.30	205.00	186.00	
Mineral	Mineral	127.13	312.00	281.00	
Storey	Storey	10.32	26.00	23.00	
Washoe	Washoe	162.87	400.00	360.00	
Totals		1,172.009	\$2,880.00	\$2,592.00	
Precor & Gamble Transportation Co.					
Churchill	Churchill	67.30	\$290.00	\$261.00	(*)
Elko	Elko	319.889	1,578.00	1,240.00	
Eureka	Eureka	67.71	122.00	108.00	
Humboldt	Humboldt	279.97	1,204.00	1,086.00	
Lander	Lander	53.52	221.00	208.00	
Lyon	Lyon	53.30	321.00	293.00	
Mineral	Mineral	127.13	548.00	493.00	
Storey	Storey	10.32	44.00	40.00	
Washoe	Washoe	162.87	702.00	632.00	
Totals		1,172.009	\$5,060.00	\$4,545.00	
Santa Fe Refrigerator Despatch, Railway Exchange Building, Chicago, Illinois					
Churchill	Churchill	67.30	\$464.00	\$418.00	\$639.08
Clark	Clark	140.47	968.00	871.00	1,222.72
Elko	Elko	319.889	2,204.00	1,984.00	2,980.74
Emersalda	Emersalda	67.186	600.00	540.00	None
Eureka	Eureka	67.71	466.00	419.00	642.97
Humboldt	Humboldt	279.97	1,929.00	1,735.00	2,657.28
Lander	Lander	53.52	369.00	332.00	2,657.28
Lyon	Lyon	138.07	951.00	856.00	1,284.98
Mineral	Mineral	133.88	573.00	518.00	508.23
Nye	Nye	30.587	922.00	830.00	1,284.98
Storey	Storey	10.32	211.00	190.00	791.01
Washoe	Washoe	162.87	71.00	64.00	1,207.22
Totals		1,575.072	\$10,850.00	\$9,765.00	\$13,847.40
St. Louis Refrigerator Car Co., 350 Dorcas Street, St. Louis, Missouri					
Churchill	Churchill	67.30	\$127.00	\$114.00	(*)
Clark	Clark	128.87	243.00	219.00	
Elko	Elko	319.889	608.00	543.00	
Eureka	Eureka	67.71	127.00	114.00	
Humboldt	Humboldt	279.97	528.00	475.00	

Swift Refrigerator Transportation Co.	Lander	101.24	91.00
	Lyon	960.00	224.00
	Mineral	187.00	141.00
	Storey	240.00	118.00
	Washee	10.82	17.00
	White Pine	162.87	276.00
	Totals	1,438.949	\$2,440.00
	Churchill	67.30	\$104.00
	Clark	128.87	198.00
	Elko	394.289	609.00
Union Oil Co., Union Oil Building, Los Angeles, California	Eureka	67.71	116.00
	Humboldt	279.97	481.00
	Lander	53.52	88.00
	Lincoln	188.07	237.00
	Lyon	83.80	143.00
	Mineral	127.13	218.00
	Storey	10.32	18.00
	Washee	162.87	280.00
	White Pine	93.486	161.00
	Totals	1,608.835	\$2,760.00
Union Refrigerator Transit Co., Railway Exchange, Milwaukee, Wisconsin	Churchill	67.30	\$184.00
	Clark	128.87	420.00
	Elko	313.189	378.00
	Eureka	34.63	96.00
	Humboldt	140.16	384.00
	Lander	28.49	96.00
	Lyon	33.30	70.00
	Mineral	127.13	205.00
	Storey	10.32	313.00
	Washee	100.96	25.00
Union Refrigerator Transit Co., Railway Exchange, Milwaukee, Wisconsin	Churchill	744.779	\$2,040.00
	Clark	67.30	\$352.00
	Elko	319.889	609.00
	Eureka	67.71	1,675.00
	Humboldt	279.97	320.00
	Lander	53.52	1,319.00
	Lincoln	188.07	232.00
	Lyon	83.80	651.00
	Mineral	127.13	392.00
	Storey	10.32	597.00
Union Refrigerator Transit Co., Railway Exchange, Milwaukee, Wisconsin	Washee	162.87	50.00
	Totals	1,438.949	\$7,682.00
	Churchill	67.30	\$317.00
	Clark	128.87	609.00
	Elko	319.889	1,508.00
	Eureka	67.71	320.00
	Humboldt	279.97	1,319.00
	Lander	53.52	232.00
	Lincoln	188.07	651.00
	Lyon	83.80	392.00
	Mineral	127.13	597.00
	Storey	10.32	50.00
	Washee	162.87	768.00
	Totals	1,438.949	\$7,682.00

*No assessment in 1917.

PRIVATE CAR-LINE COMPANIES—Continued

Name of company	County	Mileage	Full cash value	Assessed 1918	Assessed 1917
Union Tank Line, 26 Broadway, New York City	Churchill	67.30	\$1,695.00	\$1,595.00	(*)
	Clark	191.26	4,566.00	4,109.00	
	Douglas	11.20	2,282.00	2,254.00	
	Elko	394.289	9,933.00	8,940.00	
	Esmeralda	92.486	2,330.00	2,097.00	
	Eureka	67.71	1,706.00	1,535.00	
	Humboldt	279.97	7,053.00	6,348.00	
	Lander	53.52	1,848.00	1,213.00	
	Lincoln	138.07	3,478.00	3,130.00	
	Lyon	89.77	2,262.00	2,035.00	
	Mineral	133.83	3,372.00	3,035.00	
	Nye	169.277	4,264.00	3,839.00	
	Ormsby	17.34	438.00	394.00	
	Storey	16.66	419.00	377.00	
	Washoe	138.52	4,749.00	4,274.00	
	White Pine	93.456	2,355.00	2,120.00	
Totals		1,984.738	\$50,250.00	\$45,225.00	
Totals for private car-line companies		28,511.204	\$586,728.00	\$528,053.00	\$430,424.00

*No assessment in 1917.

Sleeping-Car Companies

Name of company	County	Mileage	Full cash value	Assessed 1918	Assessed 1917
Pullman Company	Churchill	51.40	\$39,490.00	\$36,541.00	\$24,922.00
	Clark	107.17	61,486.00	55,337.00	50,668.00
	Elko	302.14	173,246.00	156,011.00	143,609.00
	Esmeralda	86.70	49,743.00	44,769.00	48,878.00
	Eureka	67.71	38,347.00	34,962.00	31,584.00
	Humboldt	279.76	160,506.00	144,455.00	131,240.00
	Lander	53.54	30,717.00	27,645.00	25,176.00
	Lincoln	102.95	59,068.00	53,159.00	48,366.00
	Lyon	57.09	32,755.00	29,480.00	26,337.00
	Mineral	90.98	62,198.00	46,978.00	42,305.00
	Nye	32.07	18,400.00	16,560.00	42,853.00
	Storey	10.32	5,922.00	5,380.00	4,871.00
	Washoe	162.91	98,468.00	84,119.00	46,007.00
Totals		1,404.74	\$905,941.00	\$725,246.00	\$686,685.00

Express Companies

Name of company	County	Mileage	Full cash value	Assessed 1918	Assessed 1917
Wells, Fargo & Co.	Churchill	67.90	\$16,825.00	\$15,143.00	\$13,462.00
	Clark	11.60	2,900.00	2,610.00	2,340.00
	Douglas	11.20	2,800.00	2,520.00	2,240.00
	Elko	227.689	56,898.00	51,208.00	45,517.00
	Emeralda	109.886	27,495.00	24,746.00	21,997.00
	Eureka	120.23	30,067.00	27,061.00	23,728.00
	Humboldt	140.16	36,040.00	31,884.00	28,082.00
	Lander	121.49	30,372.00	27,536.00	24,588.00
	Lyons	131.84	32,510.00	29,329.00	26,748.00
	Mineral	103.58	25,470.00	23,123.00	20,778.00
	Nye	107.227	26,092.00	23,453.00	21,155.00
	Ormsby	17.34	4,335.00	3,901.00	3,529.00
	Storey	16.66	4,185.00	3,749.00	3,382.00
	Washoe	125.91	31,478.00	28,330.00	25,468.00
	White Pine	53.486	23,372.00	21,035.00	18,680.00
	Totals	1,432.308	\$358,077.00	\$322,270.00	\$288,916.00
Adams Express Company	Elko	166.81	\$13,900.00	\$12,510.00	\$5,360.00
	Eureka	83.08	2,757.00	2,481.00	1,108.00
	Humboldt	139.81	11,650.00	10,485.00	4,680.00
	Lander	25.03	2,098.00	1,877.00	835.00
	Washoe	84.58	7,048.00	6,343.00	2,067.00
Totals		449.31	\$37,441.00	\$33,698.00	\$14,045.00
American Express Company	Clark	181.26	\$22,653.00	\$20,392.00	\$18,116.00
	Elko	None	None	None	5,360.00
	Emeralda	5.30	662.00	596.00	580.00
	Eureka	None	None	None	1,108.00
	Humboldt	None	None	None	4,680.00
	Lander	None	None	None	835.00
	Lincoln	138.07	17,259.00	15,534.00	13,535.00
	Nye	138.69	17,396.00	15,602.00	13,803.00
	Washoe	None	None	None	2,067.00
Totals		463.32	\$57,915.00	\$52,124.00	\$60,029.00
Totals for express companies		2,344.988	\$453,433.00	\$408,060.00	\$362,990.00

Electric Companies

Name of company	County	Full cash value	Assessed 1918	Assessed 1917
Nevada-California Power Company.....	Churchill	\$78,500.00	\$70,450.00	\$60,000.00
	Mineral.....	178,500.00	166,150.00	141,800.00
	Nye.....	1,812,661.00	1,181,896.00	1,019,890.00
	Esmeralda.....	2,108,682.00	1,897,787.00	1,717,062.00
Totals.....		\$3,678,303.00	\$3,305,973.00	\$2,898,642.00
Nevada Valleys Power Company.....	Churchill	\$65,683.00	\$59,094.00	\$52,530.00
	Humboldt.....	66,683.00	59,093.00	52,530.00
Totals.....		\$131,366.00	\$118,187.00	\$105,060.00
Truckee River General Electric Company.....	Washoe	\$730,555.00	\$657,500.00	\$574,824.00
	Storey.....	102,611.00	92,850.00	82,089.00
	Lyon.....	133,364.00	120,055.00	106,715.00
	Ormsby.....	51,305.00	46,174.00	41,044.00
	Douglas.....	20,523.00	18,470.00	16,413.00
	Mineral.....	9,412.00	8,471.00	7,530.00
Totals.....		\$1,047,800.00	\$943,080.00	\$828,430.00
Totals for electric companies.....		\$4,862,429.00	\$4,387,185.00	\$3,872,132.00

Telephone and Telegraph Companies

Name of company	County	Wire mileage	Full cash value	Assessed 1918	Assessed 1917
Bell Telephone Company of Nevada.					
	Washoe	3,710.00	\$371,000.00	\$333,300.00	\$256,704.00
	Churchill	218.00	21,800.00	19,620.00	14,024.00
	Humboldt	968.00	96,800.00	87,120.00	66,760.00
	Lander	165.00	16,500.00	14,850.00	8,816.00
	Eureka	143.00	14,300.00	12,870.00	7,504.00
	Elko	756.00	75,600.00	68,040.00	45,712.00
	Lyon	32.00	3,200.00	2,880.00	8,984.00
	Storey	247.00	24,700.00	22,230.00	19,760.00
	Ormsby	36.00	3,600.00	3,240.00	2,866.00
Totals		6,275.00	\$627,500.00	\$564,750.00	\$415,120.00
Bridgeport Telephone and Telegraph Company.					
	Mineral	44.00	\$2,220.00	\$2,068.00	\$1,834.00
	Lyon	26.00	1,354.00	1,219.00	1,068.00
	Douglas	26.00	1,354.00	1,219.00	1,068.00
Totals		96.00	\$5,000.00	\$4,500.00	\$4,000.00
Nevada-California-Oregon Telegraph and Telephone Company.					
	Washoe	34.00	\$2,500.00	\$2,250.00	\$2,000.00
Nevada Telephone and Telegraph Company.					
	Emeralda		\$62,650.00	\$47,386.00	\$42,120.00
	Nye		52,650.00	47,386.00	42,120.00
Totals			\$106,300.00	\$94,770.00	\$84,240.00
Golconda Telephone and Power Company.					
	Humboldt	976.00	\$98,011.00	\$80,110.00	\$56,397.00
	Elko	50.00	4,560.00	4,104.00	3,646.00
	Lander	101.00	9,211.00	8,290.00	4,013.00
Totals		1,127.00	\$102,782.00	\$92,504.00	\$64,066.00
Austin-Manhattan Telephone Company.					
	Lander	30.00	\$1,875.00	\$1,668.00	\$1,500.00
	Nye	50.00	3,125.00	2,812.00	2,500.00
Totals		80.00	\$5,000.00	\$4,500.00	\$4,000.00
Utah, Nevada and Idaho Telephone Company.					
	Churchill	63.00	\$3,150.00	\$2,835.00	\$2,520.00
	Mineral	4.00	200.00	180.00	160.00
	Humboldt	368.00	36,800.00	33,120.00	29,180.00
	Lincoln	80.00	3,200.00	2,880.00	2,560.00
	Elko	35.00	350.00	315.00	280.00
Totals		550.00	\$43,700.00	\$39,330.00	\$34,720.00

Nevada Northern Telegraph Company

Totals

Western Union Telegraph Company

White Pine	74.36 74.36	98.146 (N) 0.111.00	80.631 (N) 0.104.00	84,917.00 0.417.00
Churchill	108.96	\$18,917.00	\$11,652.00	\$10,884.00
Clark	478.00	\$82,819.00	\$47,087.00	\$44,288.00
Douglas	887.00	109,642.00	98,276.00	76,410.00
Elko	11.00	1,217.00	1,096.00	918.00
Esmeralda	2,001.00	221,890.00	199,186.00	179,710.00
Eureka	604.00	66,747.00	60,172.00	40,487.00
Humboldt	482.00	53,814.00	47,988.00	42,917.00
Lander	1,876.00	218,666.00	196,709.00	180,964.00
Lincoln	382.00	42,253.00	38,028.00	31,962.00
Lyon	770.00	86,170.00	76,633.00	68,718.00
Mineral	613.00	66,743.00	61,069.00	40,080.00
Nye	537.00	61,610.00	55,449.00	36,768.00
Ormsby	446.00	49,832.00	44,399.00	50,468.00
Storey	43.00	6,909.00	4,773.00	6,101.00
Washoe	178.00	19,467.00	17,820.00	11,611.00
	1,063.00	116,472.00	104,826.00	80,996.00
Totals	10,829.00	\$1,142,490.00	\$1,028,240.00	\$888,917.00

Totals

Postal Telegraph Cable Company

Churchill	208.90	\$22,429.00	\$20,186.00	\$17,943.00
Elko	778.06	86,866.00	76,623.00	68,232.00
Eureka	173.16	19,046.00	17,141.00	13,237.00
Humboldt	700.00	77,000.00	69,800.00	61,900.00
Lander	142.60	16,678.00	14,108.00	12,640.00
Lyon	60.30	6,633.00	5,968.00	5,306.00
Storey	61.60	8,678.00	8,108.00	4,641.00
Washoe	176.20	19,882.00	17,444.00	15,606.00
Totals	2,883.70	\$251,206.00	\$226,086.00	\$200,965.00

Totals

Interstate Telephone Company

Nye	115.78	\$5,789.00	\$5,210.00	\$4,631.00
Esmeralda	210.80	10,640.00	9,686.00	8,482.00
Totals	326.58	\$16,329.00	\$14,696.00	\$13,063.00

Totals

Totals for telephone and telegraph companies

Totals for telephone and telegraph companies	21,265.23	\$2,314,724.00	\$2,068,260.00	\$1,716,417.00
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Water Companies

Name of company	County	Full cash value	Assessed 1918	Assessed 1917
Virginia and Gold Hill Water Company.....	Washoe.....	\$112,346.00	\$101,110.00	\$89,876.00
	Storey.....	112,344.00	101,110.00	89,876.00
	Ormsby.....	67,406.00	60,665.00	53,925.00
	Lyon.....	4,491.00	4,042.00	3,598.00
Totals.....		\$296,586.00	\$266,927.00	\$237,270.00
Emeralda Water and Milling Company.....	Emeralda.....	\$3,600.00	\$3,240.00	\$2,880.00
	Mineral.....	12,900.00	11,610.00	10,320.00
Totals.....		\$16,500.00	\$14,850.00	\$13,200.00
Totals for water companies.....		\$313,086.00	\$281,777.00	\$250,470.00

RECAPITULATION OF INTERCOUNTY AND INTERSTATE PUBLIC UTILITIES FOR 1918

Class	Full cash value	Assessed 1918	Assessed 1917
Sleeping-car companies.....	\$208,941.00	\$725,346.00	\$686,665.00
Private car-line companies.....	598,732.00	539,083.00	480,494.00
Express companies.....	453,453.00	448,080.00	362,984.00
Electric companies.....	4,832,659.00	4,367,185.00	3,873,122.00
Telephone and telegraph companies.....	2,314,724.00	2,083,350.00	1,716,417.00
Water companies.....	313,086.00	281,777.00	250,470.00
Totals.....	\$9,826,941.00	\$8,398,701.00	\$7,299,068.00

INTRACOUNTY PUBLIC UTILITIES ASSESSMENT FOR 1918
Intracounty Electric and Gas Companies

Name of company	County	Full cash value	Assessed 1918	Assessed 1917
Consolidated Power and Telephone Company (Power Department)	Clark	\$21,897.00	\$19,797.00	\$17,598.00
Douglas	Douglas	16,961.00	15,265.00	13,569.00
Ely Light and Power Company (old plant)	White Pine	58,000.00	52,200.00	46,400.00
Ely Light and Power Company (new plant)	White Pine	20,000.00	18,000.00	15,600.00
Elko-Lamoille Power Company	Elko	112,857.00	101,572.00	90,286.00
Las Vegas Land and Water Company	Clark	1,310.00	1,719.00	1,498.00
Reno Power, Light and Water Company (Electrical Department)	Washoe	699,870.00	629,883.00	541,215.00
Reno Power, Light and Water Company (Gas Department)	Washoe	127,920.00	115,128.00	90,000.00
S. R. Young Electric Company (Gas Department)	Washoe	29,133.00	26,220.00	23,806.00
Winemona Water and Light Company (Lovelock & Woolsey Light and Power Company)	Humboldt	60,000.00	54,000.00	48,000.00
Winemona Water and Light Company (Electrical Department)	Humboldt	7,143.00	6,438.00	5,715.00
Carson City Coal Gas Company	Ornaby	8,250.00	6,925.00	2,600.00
Las Vegas Gas Company	Clark	2,750.00	2,475.00	2,200.00
Ely Electric Company	White Pine			
Totals		\$1,161,791.00	\$1,045,612.00	\$897,918.00

Intracounty Telephone and Telegraph Companies

Name of company	County	Full cash value	Assessed 1918	Assessed 1917
Consolidated Power and Telephone Company (Telephone Department)	Clark	\$7,500.00	\$6,750.00	\$6,000.00
Elko Telegraph and Telephone Company	Elko	57,143.00	51,423.00	45,714.00
Nevada Northern Telephone Company	Elko	5,000.00	4,500.00	4,000.00
Searchlight and Western Telephone Company	Clark	10,000.00	9,000.00	8,000.00
United Farmers Telephone Company	Douglas	30,000.00	27,000.00	24,000.00
White Pine Telephone Company	White Pine	8,000.00	7,200.00	6,400.00
Yerington Electric Company	Lyon	2,000.00	1,800.00	1,600.00
Mason Valley Telephone and Telegraph Company	Lyon	16,000.00	14,400.00	12,800.00
Nevada Consolidated Telephone and Telegraph Company	Ornaby	1,000.00	900.00	800.00
Nevada Interurban Telephone Company	Ornaby	2,000.00	1,800.00	1,600.00
Baker Telephone Company	White Pine	2,825.00	2,543.00	2,260.00
Hawthorne and Mina Telephone Company	Mineral	1,250.00	1,125.00	1,000.00
Totals		\$151,118.00	\$136,007.00	\$120,894.00

Electric Railroads

Name of company	County	Full cash value	Assessed 1918	Assessed 1917
Reno Traction Company	Washoe	\$100,000.00	\$20,000.00	\$20,000.00
Nevada Interurban Railway Company	Washoe	16,667.00	15,000.00	13,334.00
Totals		\$116,667.00	\$105,000.00	\$33,334.00

Intracounty Water Companies

Name of company	County	Full cash value	Assessed 1918	Assessed 1917
Winnemucca Water and Light Company (Water Department)	Humboldt	\$30,000.00	\$31,000.00	\$72,000.00
Austin Water Company	Lander	10,000.00	9,000.00	20,000.00
Carson Water Company	Ormsby	58,750.00	84,375.00	75,000.00
Elko Water and Light Company	Elko	100,000.00	90,000.00	80,000.00
Ely Water Company	White Pine	100,000.00	90,000.00	80,000.00
Eureka Water Company	Eureka	20,000.00	18,000.00	16,000.00
Hawthorne Water Company	Mineral	10,000.00	9,000.00	8,000.00
Indian Springs Water Company	Nye	6,000.00	4,500.00	4,000.00
Las Vegas Land and Water Company (Water Department)	Clark	20,000.00	18,000.00	16,000.00
Manhattan Water Company	Nye	5,714.00	5,142.00	4,571.00
Mason Water, Light and Power Company	Lyon	7,500.00	6,750.00	6,000.00
Ruby Hill Water Works	Eureka	1,667.00	1,500.00	1,334.00
Goldfield Consolidated Water Company	Esmeralda	100,000.00	90,000.00	104,000.00
Tonopah Sewer and Drainage Company	Nye	43,750.00	39,375.00	35,000.00
Water Company of Tonopah	Nye	400,500.00	360,450.00	320,400.00
Wonder Water Company	Churchill	10,000.00	9,000.00	8,000.00
Virginia Ranch Land and Water Company	Douglas	2,857.00	2,571.00	2,286.00
Reno Power, Light and Water Company (Water Department)	Washoe	624,501.00	562,050.00	450,920.00
Round Mountain Power and Water Company	Nye	50,000.00	45,000.00	40,000.00
Eagle Mountain Water Company	Nye	1,429.00	1,287.00	1,148.00
Totals		\$1,696,666.00	\$1,627,000.00	\$1,344,654.00

**RECAPITULATION OF INTRACOUNTY PUBLIC UTILITIES
ASSESSMENT FOR 1918**

Class	Full cash value	Assessed 1918	Assessed 1917
Electric and gas companies	\$1,161,791.00	\$1,045,612.00	\$897,918.00
Telephone and telegraph companies.....	151,118.00	136,007.00	120,894.00
Electric railroads.....	116,687.00	105,000.00	98,334.00
Water companies.....	1,696,668.00	1,527,000.00	1,344,654.00
Totals.....	\$3,126,244.00	\$2,813,619.00	\$2,456,800.00

**RECAPITULATION OF INTERSTATE AND INTERCOUNTY PUBLIC
UTILITIES ASSESSMENT FOR 1918 AND INTRACOUNTY PUBLIC
UTILITIES ASSESSMENT FOR 1918.**

Class	Full cash value	Assessed 1918	Assessed 1917
Interstate and intercounty	\$9,326,341.00	\$8,393,701.00	\$7,299,088.00
Intracounty	3,126,244.00	2,813,619.00	2,456,800.00
Totals.....	\$12,452,585.00	\$11,207,320.00	\$9,755,888.00

GENERAL RECAPITULATION

Class	Full cash value	Assessed 1918	Assessed 1917
Interstate and intercounty railroads	\$77,930,416.00	\$70,137,374.00	\$61,067,750.00
Intracounty railroads.....	606,306.00	547,475.00	490,261.00
Totals.....	\$78,536,722.00	\$70,684,849.00	\$61,558,011.00
Interstate and intercounty public utilities.....	\$9,326,341.00	\$8,393,701.00	\$7,299,088.00
Intracounty public utilities.....	3,126,244.00	2,813,619.00	2,456,800.00
Totals.....	\$12,452,585.00	\$11,207,320.00	\$9,755,888.00
Grand totals.....	\$90,991,307.00	\$81,892,169.00	\$71,313,899.00

NEVADA TAX COMMISSION,

EMMET D. BOYLE, *Chairman.*

Attest: F. N. FLETCHER, *Secretary.*



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT

1918

AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEVADA

June, 1918

E-NIGHT CAMPS
VS.
FRESH BED-GROUNDS
Nevada Sheep Ranges

By

C. E. FLEMING, B.S.A.,
of the Department of Range Management
Agricultural Experiment Station

BY THE UNIVERSITY OF NEVADA
RENO, NEVADA



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MPs vs. ESTABLISHED BED-GROUNDS

INTRODUCTION

ts the results of experiments during two seasons
ther it is practical to handle sheep on summer
without returning each night to an established
fect of such a system of handling on the sheep
parison with the prevailing method of returning
bed-ground.

eral method of handling sheep on the summer
e public domain is to make a permanent bed-
e sheep are returned each night until all the
us of a mile to three miles of the bed-ground
a new camp is established. Quite frequently,
handling, the sheep are close-herded; dogs are
than is good either for the sheep or the range;
running, and massing take place; the range
destroyed by the hoofs, and there is a material
wes and lambs.

loss of flesh and destruction of range might be
made during the summers of 1916 and 1917 to
ada conditions what the advantage to the ewe
be and what difference it would make in the
the range if the sheep were allowed at all times
openly, and quietly, and were allowed to bed
were overtaken by night instead of being driven
permanent bed-ground.

studied under each system during the summers
he details, results, and conclusions for the two

OF RANGE WHICH WAS STUDIED

re results from the two systems we had to find
range which was very much the same all over,
there. The grasses and plants had to be the
about as thick on one part of the trial range
country had to be about the same on one part
e same amount of water on both. The range
grass-land region, a rolling hill country where
t all of it easily. The grass was about the same
kind of country and watering-places were very
an ideal range on which to try out the two

made up mainly of grasses, with a scattering
browse. There was very little timber, only a
s of aspen, which were used by the sheep to
shade during the heat of the day. On the aver-
ths of the surface of the ground was occupied
sisting of possibly 75% grass and 20% weeds
out 7% of the forage was not utilized. Because
y uniform range, any differences in carrying

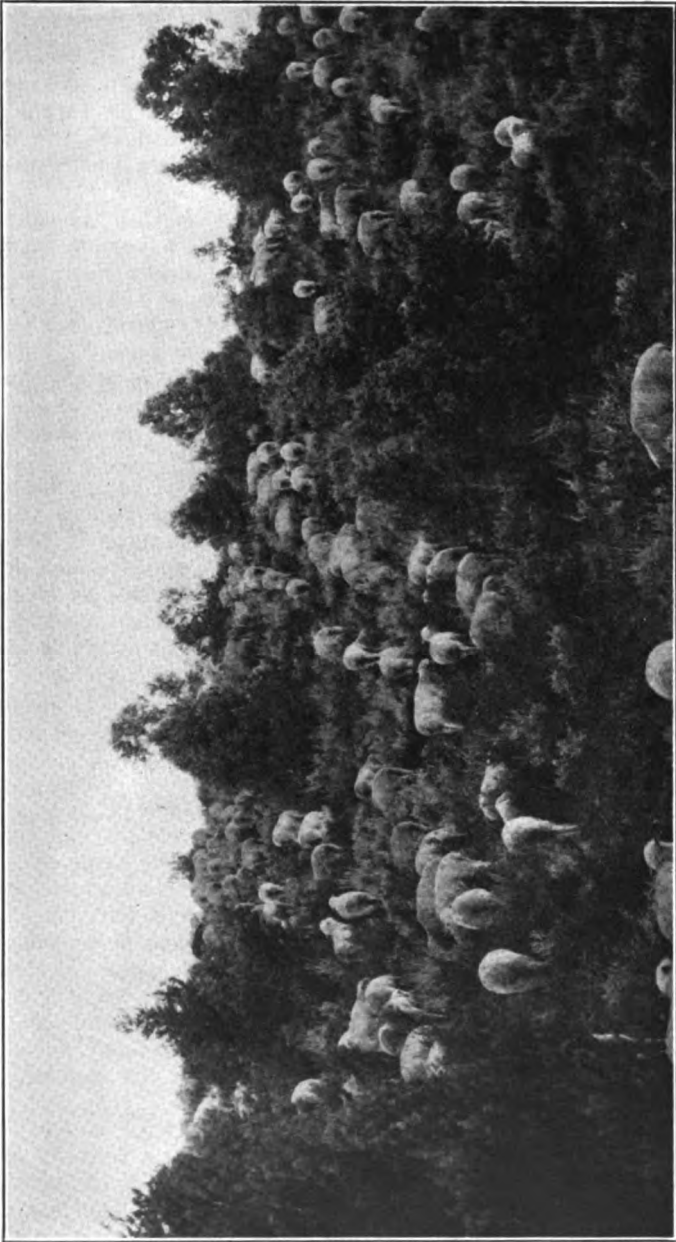


Figure 1. Sheep grazing openly, quietly, and contentedly. Heavier lambs, fewer cripples, and fat ewes will result at the end of the summer grazing season.

capacity can only be attributed to the methods used in handling the sheep.

BREEDS OF SHEEP USED

The ewes handled under the various tests were mainly fine-wools, with a good many showing the long-wool characteristic of the Lincolns and Cotswolds, or the typical black and brown faces of the Shropshire and Hampshire. However, the foundation blood consisted mainly of Merino and Rambouillet.

HERDING QUALITIES OF THE VARIOUS BREEDS STUDIED

From all observations made during the two seasons, it appears that the fine-wool sheep taken collectively are more easily herded and handled than either the mutton or the coarse-wool breeds.

The western sheepman has never developed a type of sheep which would meet his own special needs. He has taken the various breeds which have originated from the peculiar standards of the various breeders, from environment, and from the varying character of climate, forage and soil, and adapted them as best he could to meet his own varied economic conditions. Because of this intermingling of breeds there are few flocks of pure-bred sheep on our western ranges. Consequently the wool is far from being uniform, the herding qualities vary in different flocks, the lambs produced are decidedly uneven, and the ability to withstand severe winters varies according to the breed of the sheep being handled. However, sheep especially adapted to western range conditions must have the ability to stand severe storms, with little or no protection, and to maintain themselves during periods of drought and starvation; they must be good shearers, and must have an inbred tendency to herd well without unnecessary trailing and straying.

The fine-wool sheep, therefore, have a big advantage on our western ranges over most other breeds because the environment under which they were developed and produced gave them a pronounced ability to sustain themselves on scanty coarse feed.

As rustlers they are entitled to first place. On account of this active rustling habit, they are more particularly adapted than other breeds for grazing on our rough broken ranges where they are forced to cover a large area in order to get their feed. Further, sheep on our Nevada ranges are kept to average age of seven to eight years, and the fine-wool breeds will hold their wool better than any other breed to this age. The mutton breeds soon become light shearers, the wool getting especially thin over the stomachs. Of all the breeds observed, the fine-wools utilized the range forage most efficiently; and their lambs, produced by crossing blocky mutton-bred sires, were the most promising on the range.

HERDERS

The herders in every instance were Basques. In Nevada practically all of the sheep are handled by this class of herders. As a general rule, after being given the proper instructions they are very reliable and conscientious shepherds. The herders who handled the sheep under observation all had more or less ability and displayed considerable energy, but they did not handle their flocks in the same manner. This difference in the methods of handling, offered an

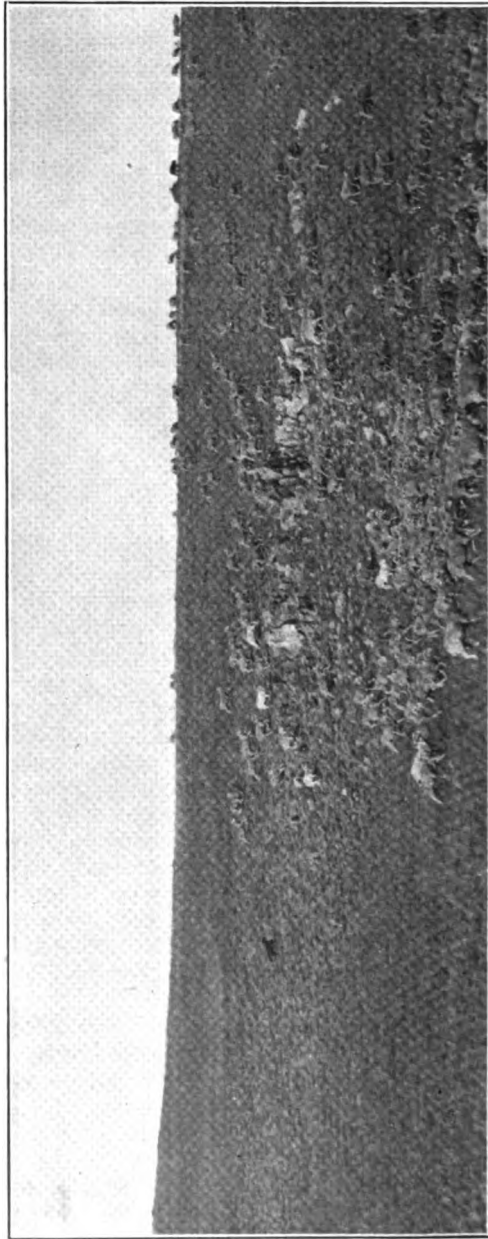


Figure 2. Running the wool and mutton off the sheep. The lazy herder's way of herding. His lambs would weigh at the end of the season from 5 to 7 pounds more if all the unnecessary dogging and running were cut out.

for working out comparative range-carrying average daily gains made by lambs under the handling sheep on our public domain range. In the methods of the various herders was their bed-ground daily and allowed their sheep to graze openly and quietly, while others close-herded and returned them each night to an established camp within a radius of two to three miles was grazed. The camp would be moved by the camp-tender and a new camp would be some other part of the range. A comparison follows.

ESTABLISHED BED-GROUND SYSTEM

Under the established system a main camp is established and the sheep are returned each night and bedded down on the same ground with the herder they remain all night until early morning, when they commence to graze because their stomachs are empty and they are hungry. The herder must now be on duty to direct the sheep where he wishes them to graze during the day.

BEDDING-OUT SYSTEM

As previously explained the sheep are returned to a new camp each night, but with the bedding-out system the sheep are bedded down on a new area each night. This means a new camp every day or a new bed-ground every third day in dry weather, when it would be impracticable to move the camp. However, under Nevada conditions, there are but few dry summers when it is wet and cold, so that, under these conditions it is entirely feasible to have a new bed-ground

rather than to graze the vicinity of a camp to ruin the range forage as under the old system. The sheep are in good condition and grazed again at a later date. This allows the sheep to graze on fresh feed, which allows them to graze during the morning and evening hours and to seek shade during the heat of the day.

When the sheep leave the bed-ground in the morning they spread out; some going in one direction and others in another. They travel fast and others slow. In a short time they will have spread over a large area, and the herder can find a compact bunch, as they were when they left the bed-ground. They will have commenced to separate into smaller

groups. Before, the lazy herder, or the one who uses the established system of handling, resorts to the use of the dog. He has the sheep rounded up into a more or less compact bunch, running, and trailing go on all day until dark and at night to the bed-ground.

Herders continually use their dogs in order to keep the herd up with the leaders; but the energetic herder will keep himself moving around the outside of the herd, turning or retarding the leaders. This allows

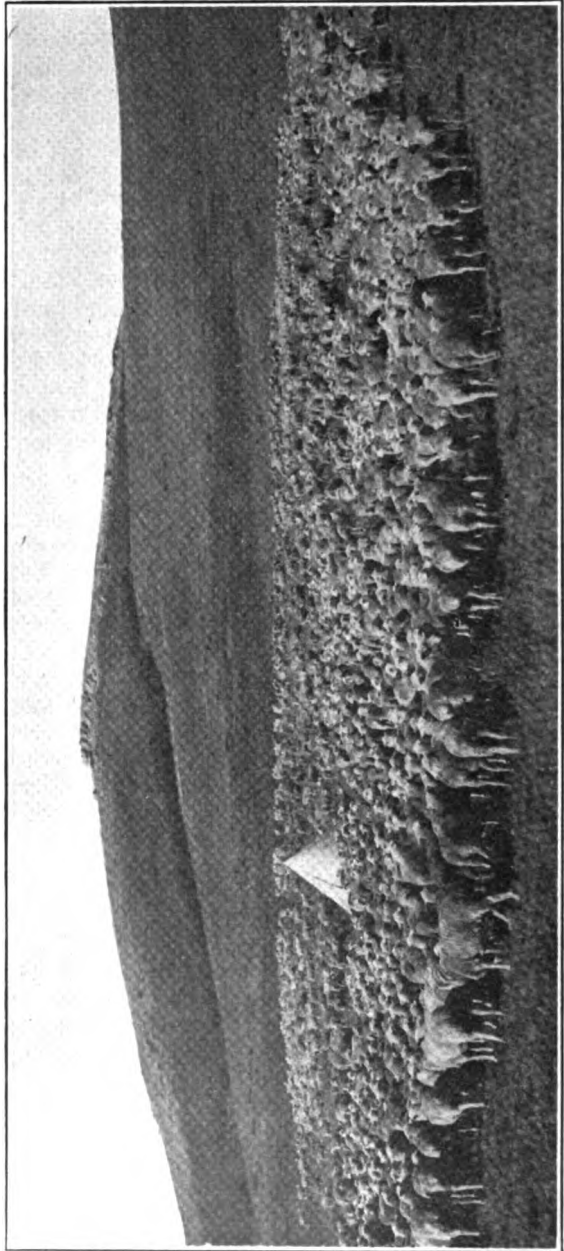


Figure 3. Sheep ready to bed down at evening on a new bed-ground. If the bed-ground is changed daily, the lambs will grow more rapidly, and the range will not be abused.

all the animals to graze contentedly with the greatest possible chance to exercise choice in the selection of forage. The sheep are allowed to bed down wherever they may be when night overtakes them.

If the heaviest range lambs are to be produced from a given piece of range, the system outlined above must be used. The ideal way of handling sheep on the range should approach as nearly as possible the manner of grazing within a pasture where the animals do the least amount of trailing from one place to another and where they are at all times allowed to graze openly and quietly without being disturbed. Of course, it is impossible under our present public domain conditions to handle sheep on the range under fence; but the pasturage system should be the ideal and should be approached as closely as possible. This means that tail-end herding must be done away with and the herding take place from the sides and front, the herder continually turning at all times the fast-trailing leaders. The slow-grazing sheep which are feeding in the rear of the flock will not then have to keep up with the fast-trailing leaders. This gives all the animals in the flock an equal chance to fill in the shortest possible time.

This is by no means a lazy man's way of herding, but it means an increase in the carrying capacity of the range, and means the production of heavier range lambs, fatter ewes, and fewer cripples. It simply means grazing with the least possible herding or actual driving. It allows the sheep to graze continually in the cool morning hours and to "buck up" during the heat of the day. It permits them to graze with quiet natural freedom, which favors the most efficient production of wool and mutton.

EQUIPMENT NECESSARY UNDER EACH SYSTEM

Under the old system of returning to an established camp each night the herder is usually supplied with two tents. One he uses for cooking and for storing supplies; the other he sleeps in. Frequently, however, the cook tent is very close to the bed-ground, so that he may use it if he wishes for cooking, storage, and sleeping. Generally he is not supplied with any means of transportation, depending entirely upon the camp-tender to do all of the moving of his camp supplies.

When the bedding-out system of one-night camps is used, the herder must have a horse or a burro on which he can lash his tent, bed, and provisions every day for transportation to the newly established bed-ground. A burro will carry the average summer-weight bed all day and never feel any discomfort; and, further, he will graze as one of the sheep. He is a very hardy inexpensive animal and will graze almost any area where sheep will feed. On some ranges the herders carry their beds on their backs to the new bed-ground. However, on most ranges it will pay a lot better to use a burro.

The most practical tent for the herder is a tepee. In heavy storms it gives the best protection, and when transported it is very easily taken down and set up. It is light in weight and not at all bulky. Possibly the most convenient way of carrying bed and tent is simply to take down the tepee in the morning, lash it on the burro, turn him

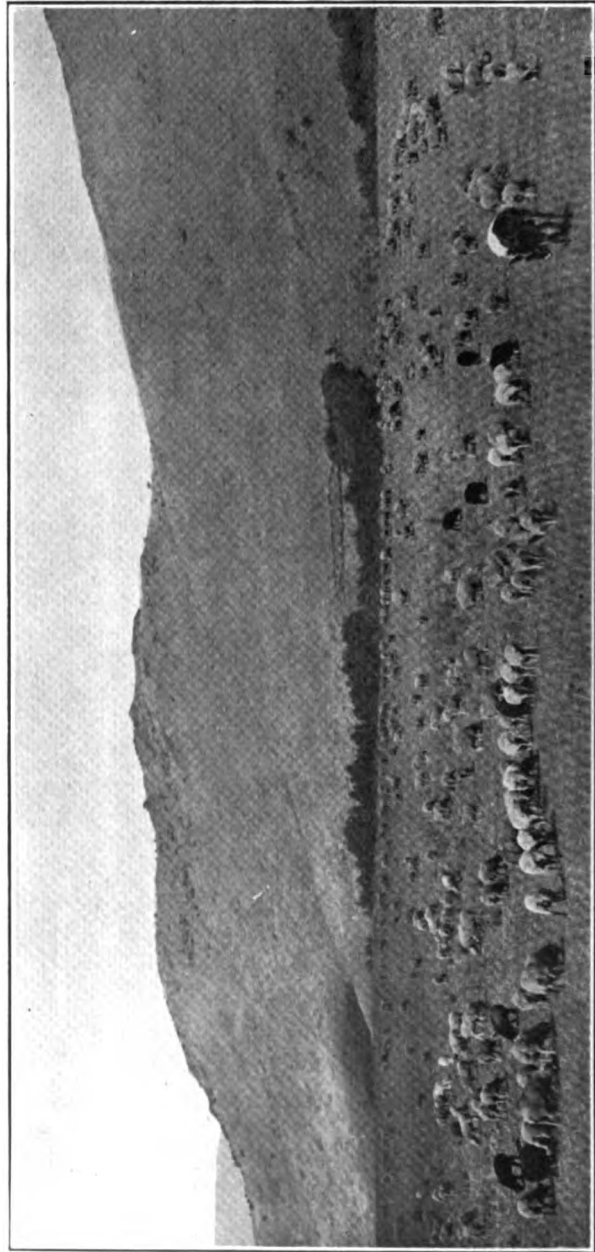


Figure 4. All day the burro carries the bed and tepee, grazing as one of the flock. At night the burro, the sheep, and the herder bed down wherever they are on the range. Open grazing and one-night camps mean increased profits to the owner, more mutton and wool for the Nation, and little abuse to the range plants.

sheep and let him graze along with them until they bed down for the night. A few herders prefer to wait until they are almost ready to bed down; then go and get the bed-ground and put it up where the sheep are to

REQUIRED TO CHANGE HERDER'S BED FROM ONE BED-GROUND TO ANOTHER

is required to take down a herder's tent and lash it to the burro varies, but with the experienced herder it can be done in much more than ten minutes. It can be done in less than ten minutes, but for several mornings this was the average time for a herder who was not hurrying. It takes a little longer to take down the bed, off the burro, spread it on the ground, put it up,



When the herder, when returned to an established camp night after night, takes down the bed and destroys all forage in the immediate vicinity of the camp. Note all that is left is rocks, sticks, and trails. Wonder that the range is being ruined?

However, the entire operation of changing the bed-ground to place should not take more than thirty minutes. During the summer when there is no danger from wolves, the bed is never put up, the herder merely using it as a bed.

CONSUMED IN TRAILING TO AND FROM AN ESTABLISHED CAMP

The present system of returning to a permanent bed-ground each night forces the herder to trail his sheep rather long distances to fresh feed each morning and then back again to the bed-ground. By actual time, it took one herder after another to move from one camp for six days, one hour and twenty-five minutes to move his sheep to the bed-ground; on the seventh day it took one hour and thirty-five minutes; on the eighth day one hour and thirty-eight minutes, and on the ninth day the camp was

moved. It took him much longer to get the sheep on fresh feed in the morning than to return them to the bed-ground at night due to the fact that the sheep would graze on areas over which they had been before and consequently traveled much more slowly. However, as soon as they commenced to fill they trailed much faster and would soon reach fresh feed. The above figures approximate the average time consumed in the daily trailing to and from an established camp for a number of nights in succession. The long trail each morning and night works the greatest hardship on the sheep because they are allowed to graze but little, at a time when they are most anxious to feed; and in the evening the herder is usually very anxious to get back to camp and cook his supper, and consequently trails them in just as rapidly as possible by whistling, shouting, and the use of his dogs.

For range sheep, more especially lambs, to make the best gains, they should be allowed to graze during the cool evening and morning hours. This is not done when they are forced to trail over range which has already been grazed, as is always the case when the established bed-ground system is used. If they are not forced to make the long daily trail to and from an established camp, the general result will be a material increase in the carrying capacity of the range and a marked increase in the growth of the lambs.

SALTING

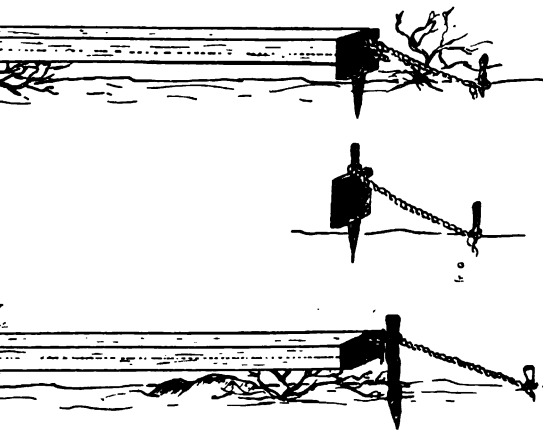
Too much emphasis cannot be placed upon the importance of giving the sheep a regular and liberal amount of salt. When the sheep are returned each night to an established camp it is comparatively easy to put sufficient salt at one time on the bed-ground to last them for five or more days. However, even under this system some herders do not salt their sheep more often than once a week, which is entirely too seldom. The best results are obtained when the sheep are given a little salt each day. When the camp is being moved daily this is more or less impracticable. Notwithstanding, they should be salted every three days. This will, in most instances, keep their appetites normal. As soon as sheep become salt-hungry they become restless and will eat many plants that normally they will not touch. A perverted taste is developed, and, of course, with this abnormal taste many cases of poisoning take place which could be avoided had the sheep been regularly salted. The best salt to use is the fine table salt, next to this the crystalline dairy salt. The rock salt is very unsatisfactory, for the reason that it takes a sheep a long time to get an amount sufficient to satisfy its wants. Further, this salt is very hard on the teeth of the sheep.

There are several ways of distributing salt to sheep on the range. One of the most common is to scatter the salt in several small piles, fifty to a hundred in number, on the bed-ground, the number of piles depending on the size of the flock. This will give all the sheep a chance to get at the salt without unnecessary crowding and will allow each sheep to get the proper amount. A much less common way is to have five or six galvanized tubs which will nest in each other (Figure 6). These tubs waste no salt, and are light and easily

cellent way of salting on the range to reduce the use of canvas troughs as shown in Figure 7. Sewing 12- or 14-oz. canvas together to form a tray twelve feet long, at the end of which are end-plates. These troughs are then stretched and held by means of stakes as shown in the illustration. A steel stake which is attached to the end-pieces is driven around, making stationary the lower part of the trough. The upper part is made solid by means of small guide stakes. The amount of salt taken to the sheep camps is reduced. After salt has been transported long distances by pack-horse it becomes quite expensive. The expense is entirely avoided by the use of simple devices described.



All troughs nest each in another. They save salt and are easy to carry.



Portable canvas salting troughs for sheep.

Given salt at long irregular intervals it upsets, in a manner, the digestive functions, causing scourgs observed among several flocks were when the sheep received one-half ounce daily—that is, three pounds to one hundred sheep. The sheep actually consumed this amount of salt and do not take into account any waste. If the salt is given in such a way that part of the salt is lost, then a larger amount per head must be supplied. The above figures must be remembered when estimating the actual amount of salt consumed daily per head on the range in order to make the troughs normal and to make the largest daily gain in weight from the forage consumed. This is the smallest amount of salt required when grazing on the open range.

COMPARATIVE CARRYING CAPACITY OF RANGE UNDER BOTH SYSTEMS

Not only does the carrying capacity of the range vary according to the different kinds of plants making up the forage grazing types and the density of forage growing on them, but it also varies according to the manner in which the sheep are handled. In order to determine the difference in the carrying capacity of the range when the sheep were handled under the old system of returning to a permanent bed-ground and when they were allowed to bed down wherever night overtook them, six sheep ranges were selected for comparative study during the summers of 1916 and 1917.

The following table gives the carrying capacity of the range for each of the areas under observation:

Sheep Handled Under Bedding-Out System

Flock	Year	Ewes	Lambs*	Total sheep	Actual days of grazing	Total acreage grazed	Acreage utilized per day per sheep	Acreage utilized per 100 days per sheep
No. 1	1916	1,656	1,492	2,402	73	3,413	.0195	1.95
No. 2	1916	1,881	1,515	2,638	68	2,938	.0177	1.77
No. 3	1916	1,485	1,273	2,121	62	2,669	.0203	2.03
No. 4	1917	1,573	988	2,087	60	2,410	.0194	1.94
No. 5	1917	1,883	1,007	2,386	49	1,775	.0152	1.52
No. 6	1917	2,011	1,172	2,597	62	2,776	.0172	1.72
Average .....							.0182	1.82

*Two lambs considered equivalent to one mature sheep

Sheep Handled Under Established Bed-Ground System

Flock	Year	Ewes	Lambs*	Total sheep	Actual days of grazing	Total acreage grazed	Acreage utilized per day per sheep	Acreage utilized per 100 days per sheep
No. 1	1916	1,439	1,421	2,149	55	2,697	.0227	2.27
No. 2	1916	1,604	1,583	2,395	67	3,915	.0244	2.44
No. 3	1916	1,685	1,602	2,486	66	3,413	.0208	2.08
No. 4	1917	1,825	1,100	2,375	62	3,050	.0207	2.07
No. 5	1917	1,930	1,080	2,470	65	4,050	.0252	2.52
No. 6	1917	2,012	820	2,422	88	5,578	.0261	2.61
Average .....							.0233	2.33

*Two lambs considered equivalent to one mature ewe.

From the above tables the ewes and lambs handled under the bedding-out system utilized 1.82 acres per sheep per 100 days grazing season as compared to 2.33 acres per sheep per 100 days when they were returned to an established camp each night, a difference of 21.4% in favor of the bedding-out system in acres actually required to support a sheep for any given length of time.

This increase in carrying capacity when the two statements are compared may be accounted for by the facts that (1) the sheep are not forced to return each night over range already fully utilized, but are allowed to pass over an area only once and thus the loss of forage through trampling is reduced to a minimum; (2) a given area

utilized at one time, but is regrazed at a later time; the plants to put forth fresh leaves after once instead of being completely eaten to the ground, impairs the vitality of the plants for any future season; (3) when allowed to graze openly and bed out in open formation and only a few hoofs, any given plant, which minimizes injury to the (4) less waste of forage takes place, for sheep feed is available; (5) there is less packing of using it to dry out more rapidly with the consequent growth of the range plants, and (6) a more of the area grazed takes place as it eliminates extremely close grazing in the immediate vicinity of bed-ground and incomplete utilization of more

If sheep range has a carrying capacity of 5,000 head on established bed-ground system, then with a savanna vegetation which actually takes place where the sheep are used, that same range, under the latter system, has a carrying capacity not of 5,000 head but of 6,070. If the use of forage could be effected over all of our public lands it would mean a tremendous increase in the carrying capacity of our grazing ranges, or, in other words, a much larger stock could be ranged than at the present time. If more animals were run than at the present time, the public domain ranges would have a chance to pay for seeding.

UTILIZATION UNDER EACH SYSTEM

To determine the degree of utilization of the range when compared to a fixed bed-ground as compared with the range allowed to bed where night overtook them, a series of quadrates six feet square were selected on the range before the sheep began to graze them and the degree of utilization on each of the small areas listed. At the close of the season the plants were again recorded in order to determine whether the number removed or the degree of utilization of the range was the same for each range. The two areas selected were in rolling country where it was possible for the sheep to graze a portion of the range with ease. The main type of vegetation in these ranges was grasses and weeds having a covering over all of the area grazed.

The range where the sheep were returned to a central camp was divided out from a central camp so that a quadrate $\frac{1}{4}$ -mile, $\frac{1}{2}$ -mile, $\frac{3}{4}$ -mile, 1-mile, $1\frac{1}{2}$ -mile, $1\frac{3}{4}$ -mile, respectively. At the close of the season 97% of the sheep were removed in the $\frac{1}{4}$ -mile zone, 95% in the $\frac{1}{2}$ -mile zone, 68% in the 1-mile zone, 48.4% in the $1\frac{1}{2}$ -mile zone, 14.1% in the $1\frac{3}{4}$ -mile zone,

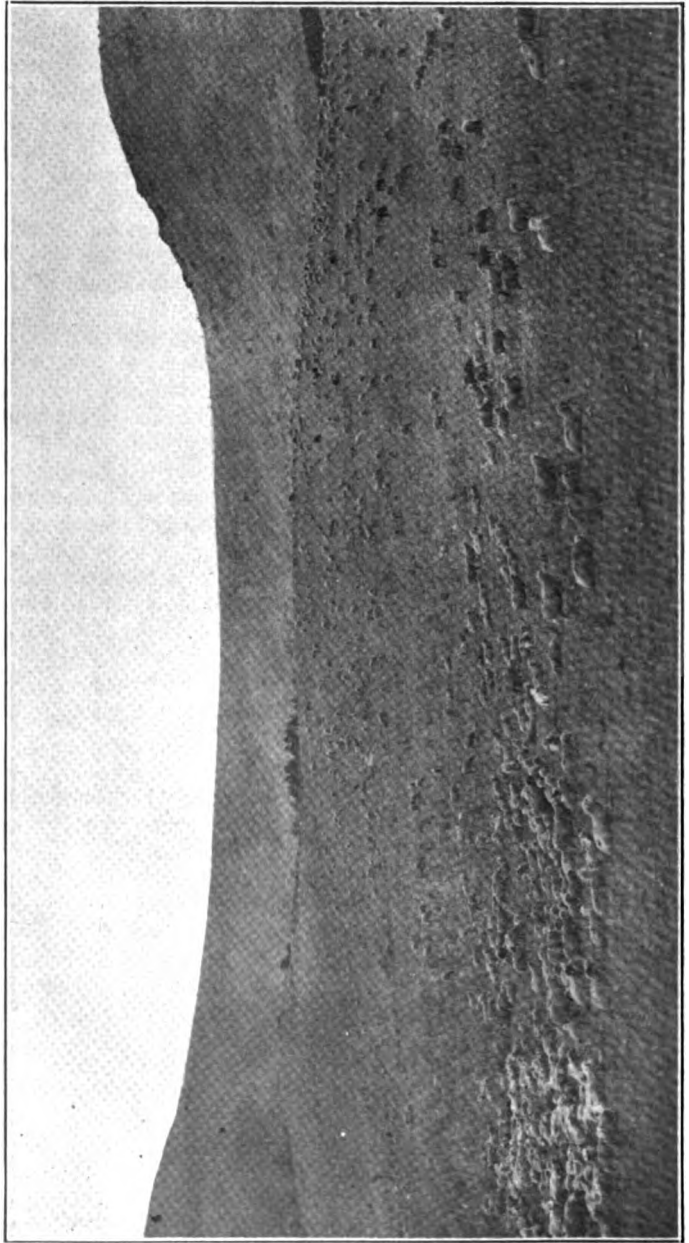


Figure 8. Ideal system of herding on the range. Some are standing, some lying down, others quietly grazing. This means that more sheep can be grazed on a given area and more wool and mutton produced.

and in the 2-mile zone no appreciable utilization had taken place. Thus, there was overgrazing in the immediate vicinity of the bed-ground and no use made of the range two miles away.

On the range where the sheep had been allowed to select their bed-ground each night, out of the 32 quadrates established an average of 84.4% of the plants had been removed from each quadrate, and thus a very uniform utilization of the entire area had taken place, only 15.6% as an average of the forage being left ungrazed. On this range no area was completely grazed at one time, but was left to be regrazed at a later date. As a result, no injury was done to any part of this range, while in the case of the range where the sheep were returned to a central camp the range was badly abused and overgrazed in the vicinity of the bed-ground. Of course, the percentages given will vary with each different range and even with the same range, depending on the herder and the length of time the sheep are on the range, the climatic conditions affecting the growth of the forage plants, and the size of the flock. However, they do give comparative figures which illustrate admirably the fact that the range forage may be efficiently utilized or badly abused simply by the manner in which the sheep are handled.

There can be no question that the carrying capacity of the range, where equal and uniform grazing takes place, is materially greater than where certain portions are injured by overgrazing and other portions scarcely two miles from the central camp are not used at all.

Where the sheep graze on a different area each day, the plants are allowed to go to seed. Ordinarily this would not take place if all the forage had been removed at one time as it is around a fixed bed-ground. Thus, not only is there a material saving in forage, due to the elimination of waste through trailing and overgrazing, but the carrying capacity of the range may even increase each year because the plants already found on the range are allowed to go to seed.

COMPARATIVE GAINS MADE BY LAMBS UNDER EACH SYSTEM

In order to determine the effect of each system upon the growth of lambs, twenty average individuals were chosen from each flock, weighed at the beginning of the grazing season and again at the close. The comparative gains made by the various groups of lambs are given in the following tables:

Gains Made by Lambs Under Bedding-Out System

Flock	Year	Actual days of grazing	Average weight at—		Gain per head	Average gain per day
			Beginning	Close		
No. 1.....	1916	73	42.3 lbs.	70.0 lbs.	27.7 lbs.	.380 lbs.
No. 2.....	1916	63	45.5 lbs.	69.1 lbs.	23.6 lbs.	.375 lbs.
No. 3.....	1916	62	43.8 lbs.	66.0 lbs.	22.2 lbs.	.359 lbs.
No. 4.....	1917	42	45.2 lbs.	61.5 lbs.	16.3 lbs.	.390 lbs.
No. 5.....	1917	49	47.4 lbs.	64.3 lbs.	16.9 lbs.	.345 lbs.
No. 6.....	1917	62	47.0 lbs.	68.7 lbs.	21.7 lbs.	.360 lbs.
Average.....		58.5	45.2 lbs.	66.6 lbs.	21.4 lbs.	.3665 lbs.

Gains Made by Lambs Under Established Bed-Ground System

Flock	Year	Actual days of grazing	Average weight at—		Gain per head	Average gain per day
			Beginning	Close		
No. 1.....	1916	55	52.0 lbs.	67.0 lbs.	15.0 lbs.	.273 lbs.
No. 2.....	1916	67	33.6 lbs.	53.8 lbs.	20.2 lbs.	.302 lbs.
No. 3.....	1916	66	38.1 lbs.	60.4 lbs.	22.3 lbs.	.338 lbs.
No. 4.....	1917	62	36.2 lbs.	57.2 lbs.	21.0 lbs.	.340 lbs.
No. 5.....	1917	65	30.4 lbs.	51.7 lbs.	21.3 lbs.	.328 lbs.
No. 6.....	1917	68	35.1 lbs.	56.5 lbs.	21.4 lbs.	.315 lbs.
Average		63.8	37.5 lbs.	57.7 lbs.	20.2 lbs.	.316 lbs.

From the above tables the lambs grazed under the bedding-out system made an average gain of .3665 of a pound per day as compared to an average gain of .316 of a pound when handled under the system of returning to an established bed-ground, or a difference of .0505 pounds per head per day in favor of the lambs grazed under the bedding-out system. This appears to be a rather unimportant difference; yet when it is applied to the growth of a lamb for a grazing season of 100 days it represents an increase in the weight of the lamb by 5.05 pounds, as compared to a lamb that is herded under the system of being brought back to an established camp each night. For a flock of 1,500 lambs it means a net increase of 7,575 pounds.

On January 1, 1917, the statistics show that there were 1,340,000 sheep within the State of Nevada. Assuming that 20% of this number are yearlings, bucks, and immature animals, it leaves 1,072,000 mature breeding ewes. The 1,072,000 breeding ewes should under ordinary range conditions produce a crop of 80% docked lambs or 857,600 lambs to go onto the summer grazing ranges. It is highly improbable, but say that one-half of these lambs are now being run under the best methods of handling, so as to produce the maximum growth in the lamb during the average summer grazing period. Now, if by improved methods of handling the weight of each lamb can be increased for the other one-half by 5.05 pounds, as shown by the figures of the preceding tables, the total increased production for the State, over what it is now would be 2,165,440 pounds of mutton for the same amount of range forage utilized. If the increased production per lamb only amounted to 2 pounds, the total increase would be extremely important.

The increased money value at 14 cents per pound for a flock of 1,500 lambs would amount to 1,500 times 5.05 pounds times .14 or \$1,060.50. This would represent just that much more profit to the sheep owner and would go a long way towards paying the summer operating expenses of a band of ewes and lambs.

The above increase in the weight of lambs when handled under the bedding-out system is primarily due to the following factors: (1) The ewes are on fresh feed every day with many different kinds of plants to select from, and, as a consequence, their milk supply is proportionately higher than the ewes which are forced to eat feed which has been already grazed over or feed which requires one to three miles trailing each day in order to utilize it; (2) the loss of time and energy consumed in trailing from an established camp is

(3) the ewes and lambs are in most instances all times just as openly and quietly as possible, latest possible range freedom in the selection of least amount of dogging, trailing, and running (4) the ewes are allowed to choose range forage latest milk supply and production of wool and

SECTION OF EWES AS AFFECTED BY TYPE OF RANGE FORAGE

Field of the ewe has a very marked influence on lamb. When a lamb is first starting out in life other considerable fat, which is known on the "allow." It makes its most rapid growth during its life, and the growth of the first month or six months is controlled by the supply of milk produced by the ewe. When the lamb has passed the lamb gradually begins to eat range of forage, so that it is not nearly so dependent

on milk produced by the ewe varies with the different seasons of the same breed, the manner in which the ewe and the kind of forage they are forced to graze. Ewes prefer succulent weeds and will make the greatest use of this type of forage. A grass range is used most often by cattle. In order to determine what effect range forage would have on the production of lambs of Rambouillet breeding were selected ewes kept away from the lambs except at times when they were allowed to suckle their mothers. Ewes were grazed on a range where the feed was mainly succulent and was becoming coarse and more or less dry. The production of the ewes on this type of range was 1.6 pounds of milk per day, shortly they were moved to a range which sup- plied succulent weeds, and the milk supply immediately increased to 1.1 pounds per day, an increase of .5 of a pound over the former was. The gains in the weights of the lambs were considered, for it was necessary to keep the lambs on the ewes' mothers were out on the range grazing, and this was normal that they did not do well. However, it was found that the various grazing types for the production of lambs in turn controls to a large degree the steady growth of the lamb.

From the above it is clearly apparent that the continued production of lambs requires a range supporting an abundance of succulent feed. Camp-tenders and sheep-herders should therefore select their grazing camps so that the ewes are used first, keeping the higher camps and the lower for use during the hot weather of July and August, and range which should be used later on in the season; and during the hottest period of the summer the ewes should eat dry feed, oftentimes going without any milk. The milk supply of the ewe is materially diminished and does not make the growth that would have been

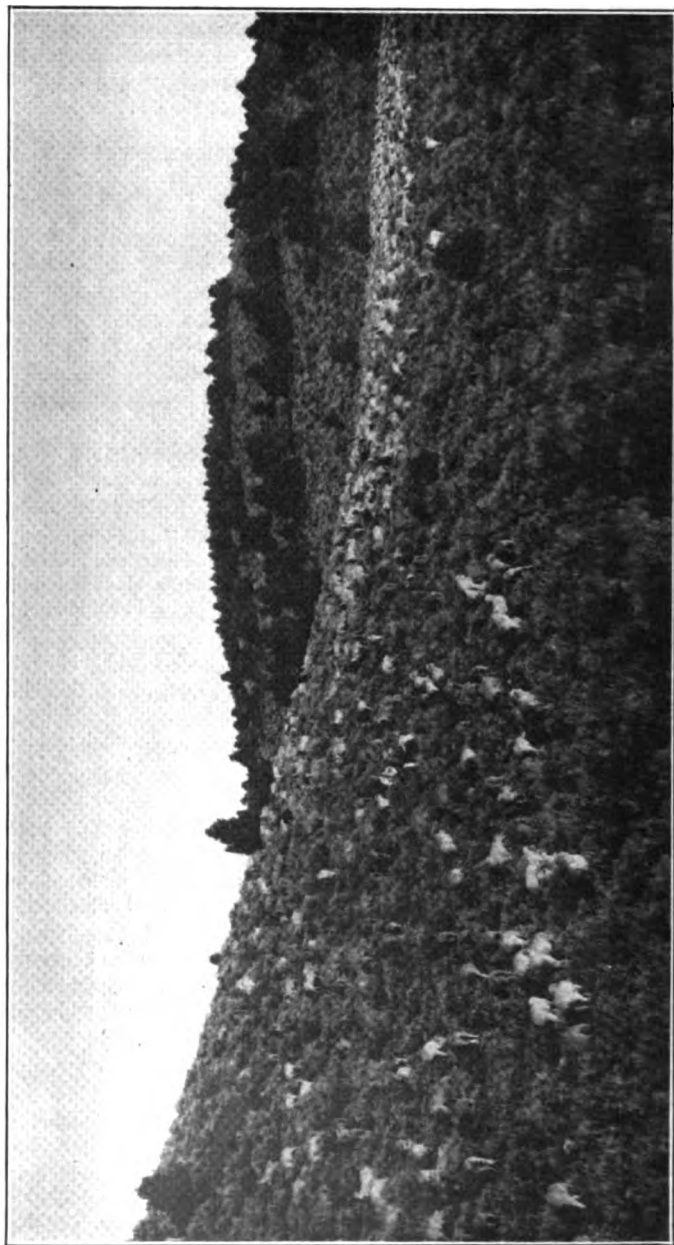


Figure 9. Tail-end herding taking place. Turn the leaders and do not try to make the slow-trailing sheep keep up with the fast-trailing leaders. Note massed formation at rear of band.

made if their mothers had been given the opportunity to shade up during the hot part of the day and had been allowed to feed upon the late-maturing succulent range forage at the proper time. The use of the range forage so that shade can be produced for the ewes and lambs during the hottest part of the grazing season, with green succulent feed near water, is not given the attention it should receive in the management of sheep on Nevada's ranges.

EFFECT OF TRAILING ON GROWTH OF LAMB

The effect of trailing long distances in order to get to and from fresh feed is well illustrated by the following case: A camp-tender had failed to move the herder's camp for eleven days and the range was badly overgrazed in the immediate vicinity of the camp, so that the ewes and lambs were forced to trail approximately $1\frac{1}{2}$ to $2\frac{1}{2}$ miles to get to fresh feed. During this period of long trailing to get to fresh feed three lambs were weighed in order to determine just what gains they were making when being forced to trail so far each day. The three lambs weighed 49, 55 $\frac{1}{2}$, and 56 $\frac{1}{2}$ pounds, respectively. Each morning for four days they were weighed, and it was found that their average increase was .25 of a pound per day. With their mothers and the other animals in the flock they were moved and put on fresh green feed and the long trails eliminated.

They commenced to gain flesh immediately. Four days after the change of feed the three lambs had made an average daily gain of $\frac{1}{4}$ of a pound, an increase of .07 of a pound per day over what they were making when compelled to make the long daily trail. This material increase in daily growth was caused by the change in the character and abundance and nearness of the feed. The long daily trails to fresh feed and back had prevented the ewes from giving the necessary amount of milk for the continued rapid growth of the lamb and had kept both ewes and lambs down in flesh; this was shown by the condition and appearance of their bodies. If this practise of maintaining a central camp from which and to which the ewes and lambs were forced to trail each day had been continued for a grazing season of 100 days, it would have meant the production of a lamb weighing on the average 7 pounds less than a lamb which had been allowed to bed down with its mother wherever they were on the range at night. Seven pounds each in the average flock of 1,500 lambs means 10,500 pounds of flesh and wool. This item is certainly worth considering, more especially when it is multiplied by the hundreds of thousands of lambs produced annually on Nevada ranges.





RABIES

ure, and Symptoms of the Disease.
Do with Animals Suspected of
the Disease. Shipping Speci-
for Laboratory Diagnosis.
aling with Animals That
re Exposed to Infection

By

H. W. JAKEMAN, V.M.D.,
hologist, State Veterinary Control Service



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CARSON CITY, NEVADA

ASSISTANCE IN COMBATTING INFECTIOUS DISEASES

The State Veterinary Control Service, working in cooperation with the Extension Division and the Agricultural Experiment Station of the University of Nevada and the State Board of Stock Commissioners, is now in a position to offer every facility for the diagnosis, prevention, and treatment of *infectious diseases* of live stock. This service includes laboratory diagnosis and the sending of veterinarians to investigate outbreaks of disease, and institute measures for their control by vaccination or otherwise. There is no charge for such service except the payment by the owner for such biological products as are actually used and which are supplied at practically cost price, being secured from properly licensed reputable commercial laboratories, except in a few instances where the materials needed are not on the open market, in which case they are specially prepared in the laboratories of the Department to meet the needs of the particular case and supplied free of charge.

This Service, however, does not make any provision to care for surgical, obstetrical, or noninfectious disease cases, nor to provide inspection for interstate shipment of live stock, these being deemed outside the functions of public-service work and properly to be cared for by the owners and veterinarians in private practise.

Address all requests for assistance to the

DIRECTOR, STATE VETERINARY CONTROL SERVICE,
University of Nevada,
RENO, NEVADA.

RABIES

By H. W. JAKEMAN, V.M.D.
Veterinarian, State Veterinary Control Service

The oldest known diseases and was written about a hundred years B. C. In ancient times a great deal of superstition were connected with it, which was due to the lack of scientific knowledge concerning any of the diseases, especially those of an infectious nature. In the history of specific infection or the manner in which it is transmitted, a great many theories based on coincidence were formed as to the nature and cause of the disease. The great work of Pasteur, carried on from 1881 to the present world as to the true nature of rabies. Nevertheless, many false ideas formed in the days when practically nothing was known about infectious diseases have been handed down from one generation to another and there is perhaps no disease which has been known on it by modern medical science has more superstition connected with it than rabies.

Whereas the eastern and western country are concerned, it is true, many numerous object lessons and tremendous livestock losses have unfortunately occurred during the past two or three years. It is to spread enlightenment as to the true nature of the disease, to dispel many of the preexisting false ideas which have been current since the disease first appeared in Nevada. There are many fallacies which, judging by the opinions and ideas expressed concerning the disease, are still retained, and are briefly mentioned.

One of the most common is that if persons or animals are bitten by a dog at any time "goes mad," the animals or persons bitten are also mad. This is absolutely false, for it is a well-proven fact that an animal to contract the disease through a bite the animal must have rabies when the biting takes place.

The "dog-day" idea which often causes considerable undue worry is that a person bitten by any dog during "dog days"—that period from July 3 to August 11 when the "dog-star" Sirius is in line with the sun—the person bitten is likely to "go mad" if the animal had rabies or not. A great many attach more importance to this addition on account of a popular belief that dogs "go mad" during the summer months. On the contrary, the statistics as to the existence of the disease during the year show that it is more prevalent during the summer months. Such has been the case in Nevada.

The "dog-day" fallacy and arrive at a clear conclusion as to the nature of the malady, it is but necessary to keep in mind that rabies is a specific infectious disease just as anthrax or tetanus. That the germ or virus which causes it must gain access to the body of an animal or person before that animal or person can contract the disease.

RABIES IN NEVADA

Rabies has existed in the State of Nevada for the past three years to an extent which has exposed many human beings to infection and the consequent inconvenience of taking the Pasteur treatment and also resulted in severe livestock losses. While federal and state authorities have been actively engaged in endeavors to control the spread of the disease and much good has been accomplished, it is still prevalent and livestock losses from it are heavy in many localities. The localities in which the disease is most prevalent change from time to time, and there is little doubt but that the disease will exist in this State for many years, appearing in new areas and reappearing in old. This, for the most part, is due to geographic conditions and the prevalence of wild animals, especially the coyote.

Considering the seriousness and fatality of the disease, it is essential that all should become familiar with its nature and symptoms as well as all available methods of combatting infection.

DEFINITION

Rabies, frequently called hydrophobia in human beings, is an acute specific infectious disease of all warm-blooded animals. It is a disease which involves principally the nervous system and is characterized by change of disposition, disturbed consciousness, extreme excitability with subsequent progressive paralysis, which almost without exception terminates in death.

TRANSMISSION

Rabies is transmitted from animal to animal or from animal to man through direct contact, usually through biting, although an animal or person may become infected through getting saliva or some of the glandular secretions into a wound even though it be exceedingly small. One animal may infect another or a human being any time up to twelve days before symptoms have appeared. The presence of the virus of rabies in the milk of a rabid animal is by no means constant, and in any event infection from such a source is not possible unless there be abrasions in the mucous membrane of the mouth or throat, as the virus is not absorbed through the uninjured tissue; nevertheless, the virus has been found in the milk of rabid cows and this possibility of infection should be kept in mind. The meat or flesh of a rabid animal probably contains the virus of rabies in proportion to its nerve supply as the virus travels along the nerves, and, as has been stated, the disease primarily involves the nervous system. The blood does not contain the virus nor transmit the disease. It should be kept in mind, however, that the blood and flesh may become contaminated by contact with saliva or portions of the nervous system containing the virus when a carcass is mutilated during butchering, etc., and thus indirectly prove a source of infection.

CAUSE

While a great deal is known concerning the nature of the germ or virus which causes this disease, it has never been isolated—that is, grown artificially. It is positively known and has often been definitely proved that the specific germ or virus exists in the saliva, milk, various glands and nervous system, while the blood and flesh seldom if ever contain the virus except through contamination in the dead animal. When infection gains entrance to the body through a wound, the virus

ds the spinal cord and brain, traveling along the
ns of the disease make their appearance when the
ne brain, and the period of time which elapses
e to the body of infection and the appearance of
known as the incubation period—varies according
is gaining entrance and the proximity of the bite
the brain. Thus, bites about the head and neck
us than those of the extremities.

s is very resistant to cold, but sensitive to heat.
roys it, while the power to produce rabies is still
as been frozen. Many of the ordinary disinfec-
atively weak solution, will destroy the virus when
it for periods of time varying from a few minutes

However, owing to the difficulty and uncertainty
ants in direct contact with the virus, it is not advis-
liance on their use for practical purposes.

INCUBATION PERIOD

apses from the moment infection gains entrance
first symptoms appear is known as the period of
varies from ten days to seven or eight months,
ling over six weeks are comparatively rare in any
The few cases on record of symptoms appearing
thentic but of rare occurrence. The usual incuba-
o five weeks. This is influenced somewhat by the
ocation of the point of infection, and amount of
e.

SYMPTOMS

abies vary a great deal in the different species and
variation in the same species. Applicable to all,
that after the symptoms have made their appear-
disease is very acute and the animal dies, usually
almost always within a week. It has always been
two types or forms of the disease, namely, dumb
e two forms are more correctly considered as dif-
eisease. The dumb or paralytic stage always follows
ut it is not at all uncommon for an animal with
e initial stage into one of paralysis without having
ury or excitement whatever. This form, however,
ently as that in which a stage of excitement or
wing to the variation of symptoms in the different
psis of those occurring in the animals most fre-
his State will be given.

SYMPTOMS OF RABIES IN THE DOG

a noticed in the dog is a marked change in the
imal. That is, a friendly or affectionate dog may
morose even with its master, while a naturally
s animal will become affectionate or cowardly and
lace out of sight. In one or two days there follows
mal has an irresistible desire to roam, and during
sts from one to three days, the animal may travel
uring this time that the most damage is likely to

be done, by biting animals or persons. The animal wanders on aimlessly in a very nervous irritable condition, but without fear, no matter what its normal disposition might have been. It does not seek some animal or person to attack, although any moving object coming within its path is more than likely to be snapped at or attacked. There is a disposition, also, to chew indigestible objects, such as sticks, stones, dirt, and rags. There may or may not be frothing from the mouth. Owing to a partial paralysis of the throat, the saliva is not swallowed, but runs from the mouth, and with champing or movement of the jaws a froth is formed. It is thought by many that an animal will avoid water, but this is erroneous. The term hydrophobia, meaning fear of water, is applicable only to man in whom the attempt to drink or even the sight of water induces convulsions. During this stage there is a change in the voice or bark of the animal due to a paralysis of the throat. The bark is characteristic of the disease and can readily be identified when once heard. Following this stage of roaming, the animal returns home and seeks some secluded spot. The dumb or paralytic stage now follows. The jaw drops, the hindquarters become paralyzed, and paralysis extends over the entire body with death resulting in from three to eight days after the development of the first symptoms. In the so-called dumb form, the above-described stage of roaming and excitement is absent and the paralytic stage quickly follows the first symptoms. The danger from dumb rabies is not so great when rabies is suspected, but it is often a great deal more dangerous, as rabies is not so likely to be suspected, particularly as many are not familiar with this form of the disease and will infect a wound in handling the animal, possibly in trying to treat it or in skinning and cutting it up after death.

The symptoms described in the dog are also found in the coyote, slightly modified by the conditions under which this animal lives.

SYMPTOMS IN CATTLE

A number of the symptoms which are seen in dogs are common to all species, although some of them are more pronounced in one species while other symptoms are not so noticeable. In cattle the first symptoms are loss of appetite, arrest of milk secretion in dairy cows, restlessness, anxiety, and general change in disposition. Possibly the first thing noticed is that an animal sulkily stands off by itself. In a day or two the stage of fury or madness begins and there is increased restlessness, anxious or stary expression about the eyes, loud bellowing with change of voice due to paralysis of the throat as in the dog, pawing and a wild desire to attack other animals, although cattle do not show the same desire to bite things, the attack being more with the horns or head. About the fourth day the animal quiets down, the gait becomes unsteady and swaying, emaciation is marked, and finally, through paralysis of the hindquarters, the animal goes down and is unable to rise. Paralysis of the entire body develops and death follows in from four to six days after the appearance of the first symptoms.

SYMPTOMS IN CATS AND OTHER ANIMALS

The disease in cats is rather more dangerous in so far as human beings are concerned as there is not so much opportunity to observe suggestive symptoms, which is due in part to the habits of cats and

nounced premonitory symptoms in most instances. A cat with rabies will usually hide itself under a dark corner, and with the beginning of the furious stage will viciously attack animals or persons. The voice almost entirely, becomes emaciated and dies within a few days.

Rabies in horses, sheep, hogs, and other animals is described in dogs, cattle, and cats.

DIAGNOSIS IN THE LIVING ANIMAL

Rabies are not always clear-cut and vary to such an extent in animals that in many instances, particularly when the disease is known, it is difficult and often impossible for the veterinarian to determine definitely whether an animal has rabies or not. Fever, loss of appetite, constipation, worms in young animals, and other conditions often produce symptoms which are indistinguishable from those produced by rabies. In making a diagnosis of a doubtful animal, it is better to be safe than sorry, and, if rabies is suspected, consider it rabid until proved otherwise. *Quarantine the animal* if at all possible to avoid doing so. Keep the animal closely confined for two or three weeks, when, if no further symptoms of rabies developed, the animal may be considered as not having rabies.

LABORATORY EXAMINATION FOR RABIES

In order to know definitely whether or not an animal had rabies, a laboratory examination becomes necessary. A conclusive diagnosis is made by a microscopical examination of certain portions of the brain, and this, on animal inoculations with certain portions of the spinal cord, rabbits usually being used for this purpose. The diagnostic bodies known as Negri bodies, which are found in perhaps the majority of investigators as being the characteristic bodies which are found in certain nerve-cells in animals affected with rabies, are not of any other disease, are progressive in their development throughout the course of the disease, so that if an animal is examined in the first stages even a most exhaustive and searching examination may fail to reveal their presence and a diagnosis must be based on animal inoculation. In the case of an animal being exposed to infection, no information can be obtained from the latter source in making a decision as to whether the Pasteur treatment for the prevention of the disease is necessary. The same length of time is required to reproduce the disease in experimental animals as is necessary for the disease to develop in an animal bitten, and the treatment which is necessary should be begun just as soon after exposure as possible. In positive cases of rabies the animal will be killed in a few days, a week at the outside, when a conclusive diagnosis can usually be obtained within twenty-four hours. If an animal suspected of having rabies die—but actually die—much more significance may be attached to the laboratory findings than if the animal had been killed. The material to be examined should reach the laboratory in a well-preserved condition as possible so that the

brain may be dissected out and those parts found by experience to be the most favorable for examination identified and the nerve-cells not destroyed by decomposition. When it becomes necessary to destroy an animal suspected of having rabies, do not shoot it through the head. Heads have been received at this laboratory in which hardly a trace of brain tissue could be found, due to a bullet having scattered the brain in every direction out of the cranial cavity. In shooting an animal through the head the brain is always damaged so that the examination and the results are often unsatisfactory for all parties concerned.

The routine procedure for a rabies examination as carried out in this laboratory is as follows: First, a microscopical examination is made of certain portions of the brain. A small portion of this tissue is placed between two glass slides and a thin smear made. This, after being properly fixed and stained, is placed under the microscope and a search made for the so-called Negri bodies. These are sometimes found at once and the examination is carried no further as an absolutely positive diagnosis of rabies is established with the finding of these bodies. Such an examination requires ten or fifteen minutes; but in the event of no Negri bodies being found the search is continued until at least twenty smears taken from different locations in the brain have been carefully and thoroughly searched. Failing to demonstrate rabies by means of the microscope, animal inoculation is resorted to. Two rabbits are inoculated with an emulsion made from different portions of the brain and cord if any be present. This inoculation is made directly under the covering of the brain. The rabbits are then kept under observation for a period of one hundred days, and if all right at the end of that time are withdrawn from the test and the case dismissed as negative of rabies.

PREPARATION OF HEADS FOR SHIPMENT

In removing the head from a dead animal suspected of having had rabies, the greatest care must be exercised in order to prevent infection of the hands. If rubber gloves are available, wear them; if not, heavy gloves of some kind should be worn and an endeavor made to keep them as free from contamination as possible. A portion of the neck should be removed with the head. In sending the head of a large animal, such as a horse or a cow, the lower jaw and the nose from below the eyes may be removed in order to reduce the size and weight of the package. The material for examination should be gotten to the laboratory just as soon as possible after the animal has died or been killed and every precaution taken to prevent decomposition. It should be wrapped in muslin and packed in ice in some container which can be tightly sealed so as to prevent leakage and possibly infection of those called upon to handle it in transit. The package should be addressed to

Department of Veterinary Science,
University of Nevada,
Reno, Nevada.

Some identification mark of the sender should be on the box or parcel, and at the time of shipping a letter should be sent, giving as complete and accurate a description as possible of the symptoms the animal showed; state whether or not any animals or persons were

infection and also whether the animal died or was recovered from the case be given, it is then possible to advise steps or precautions in the event of a positive result and valuable time is saved.

PREVENTIVE TREATMENT

Since the appearance of rabies, there is much that can be done to check the course of the disease. It usually occurs within a week from the first symptoms. All treatment, therefore, is entirely preventive. In so far as practical and possible, especially where the disease is prevalent, every effort should be made to prevent animals from exposure to attack by rabid animals. Dogs should be used around corrals when at all possible. Suspicious symptoms should be isolated where other animals in the event of developing furious rabies are known to have been attacked or one which has been attacked by a rabid animal should be promptly destroyed or at least ninety days and securely confined upon the least suspicious symptom. Animals bitten by a rabid animal should be destroyed unless the value of the animal or other procedure. While the percentage of individuals who develop rabies after exposure is high, nevertheless all animals which have been exposed to a rabid animal will not develop the disease. When handling the exposed animal or animals are at hand warrants the extra care and possible risk, they should be under close observation until the longest period of incubation has passed. This procedure is, however, in the majority of cases warranted in the case of dogs and cats.

Very long incubation period of rabies, it is possible to give preventive treatment. This treatment, as applied to animals, has recently come into general use in this country, so that it is now available to compare the results obtained with the use of the Pasteur treatment in human beings. It has proved very efficient in the fairly large number of cases in which it has been administered, and its use is well worth the expense of the exposed animal warrants the expense.

Known as Rabies Vaccine (Dilution Method of preventive treatment of rabies in animals and is sold for \$6), the complete treatment consisting of five injections administered over a period of six days. Its administration is a matter requiring the services of a veterinarian and the cost of such procedures.

To undertake the treatment of exposed animals by the dilution method, bear in mind that it should be started at the earliest opportunity. Haste is essential, especially in view of the fact that the vaccine cannot be carried in stock, but is freshly prepared in the laboratories in the East and transportation to the West at the least.



STATE OF NEVADA

OFFICIAL RETURNS

OF THE

Election of November, 1918

Compiled by
GEORGE BRODIGAN
Secretary of State



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : JOE FARNSWORTH, SUPERINTENDENT
1919

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918

County, and precinct	United States Senator				Representative in Congress			Governor		Lieutenant-Governor		Justice of Supreme Court		Secretary of State		
	Henderson, Chas. B., Democrat	Martin, Anne, Independent	Roberts, E. E., Republican	Scanlan, Martin J., Socialist	Cordill, H. H., Socialist	Downer, Sylvester S., Republican	Evans, Charles R., Democrat	Boyle, Emmet D., Democrat	Oddie, Tasker L., Republican	Sullivan, Maurice J., Democrat	Tilden, Augustus, Republican	Ducker, Edward A., Nonpartisan	McCarran, Patrick A., Nonpartisan	Brodigan, George, Democrat	Ellis, Louise Spencer, Republican	
Churchill	501	445	429	38	115	657	573	581	777	682	587	776	457	685	605	
	3	3	6	0	0	8	3	3	8	4	6	5	4	5	5	
	35	32	37	7	12	49	42	46	61	53	40	57	40	65	33	
	87	57	49	4	13	95	77	88	103	94	82	123	50	82	99	
	25	35	22	10	28	36	25	30	64	32	44	56	25	35	50	
	41	15	14	1	1	28	41	37	83	44	17	38	25	47	22	
	4	4	0	4	6	2	2	5	5	5	3	4	3	6	3	
	35	34	21	4	7	35	49	37	52	55	30	28	44	51	36	
	3	3	6	0	0	8	3	3	8	4	6	5	4	5	5	
	Totals	501	445	429	38	115	657	573	581	777	682	587	776	457	685	605

Clark	Nelson.....	8	3	19	1	3	19	14	13	19	15	17	21	10	14	18			
	Searchlight.....	45	20	15	1	5	26	49	45	33	52	25	28	39	59	20			
	Crescent.....	3	2	1	0	0	3	8	3	4	3	4	3	3	3	3			
	Goodsprings.....	83	56	19	7	24	37	102	105	51	113	43	68	68	113	40			
	Arden.....	8	7	1	0	1	4	10	13	1	18	1	7	8	13	8			
	Indian Springs.....	7	2	3	0	0	3	9	10	2	11	1	3	9	11	1			
	Las Vegas No. 1.....	164	94	101	5	24	120	205	202	148	211	117	189	110	191	131			
	Las Vegas No. 2.....	184	110	73	11	29	110	214	236	123	238	105	196	128	228	107			
	Mosada.....	30	2	6	0	0	8	27	24	12	24	9	15	16	25	10			
	Logandale.....	31	8	4	0	2	10	25	33	7	25	10	16	13	28	11			
	Ovation.....	56	24	19	0	1	33	59	68	24	55	29	37	39	62	28			

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OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

	State Treasurer	State Controller	Surveyor- General	Attorney- General	Supt. State Printing	Supt. Public Instruction	Clerk Supreme Court
	Malley, Ed, Democrat	Pruett, William E., Republican	No opponent	Cole, Geo. A., Democrat	No opponent	Bray, John Edwards, Nonpartisan	No opponent
County, and precinct							
Ormsby							
Carson City No. 1	226	122	249	196	255	216	247
Carson City No. 2	195	122	223	134	247	193	229
Carson City No. 3	194	96	201	114	219	182	201
Totals	615	340	678	407	721	591	677
Storey							
Virginia City No. 1	120	57	196	120	133	108	108
Virginia City No. 2	103	89	115	95	51	54	108
Virginia City No. 3	136	78	159	116	96	135	132
Gold Hill	64	44	72	48	82	74	82
Truckee River	10	7	14	8	14	5	13
Totals	433	225	496	337	524	232	423
Washoe							
Reno First	204	165	280	114	236	202	273
Reno Second	176	172	262	138	270	150	196
Reno Third	146	146	251	121	252	109	254
Reno Fourth	141	90	195	121	196	108	119
Reno Fifth	156	127	219	106	205	120	132
Reno Sixth	146	127	217	118	210	123	132
Reno Seventh	138	137	209	107	194	126	161
Reno Eighth	135	135	219	149	224	136	190
Reno Ninth	144	71	166	142	223	143	219
Totals	138	147	213	123	217	123	163

Mazuma	8	7	11	8	5	10	5	13	7	18	6	14
Mill City	24	4	22	21	9	20	9	25	23	17	9	23
National	11	5	13	13	3	10	6	15	11	7	10	11
Oreana	15	8	21	15	9	16	8	21	20	7	13	20
Packard	46	9	49	44	9	47	8	47	29	29	22	45
Paradise	63	35	66	66	29	53	40	61	51	42	59	69
Pueblo	5	7	11	8	6	7	6	8	10	1	1	7
Rebel Creek	10	4	14	11	5	10	5	13	9	9	6	14
Rochester	76	27	81	70	28	67	34	77	38	57	78	88
South Lovelock	161	81	167	154	79	154	88	165	138	95	154	183
Sulphur	31	18	37	30	18	32	16	34	27	17	33	44
Tungsten	4	6	8	4	6	2	8	9	4	4	5	9
Toulon	14	11	23	16	11	21	9	11	22	12	13	20
Unionville	9	6	12	5	8	5	9	11	117	134	177	188
Willow Point	175	83	180	181	74	163	100	187	117	134	177	211
Winnemucca	211	105	225	219	90	196	119	217	161	183	211	258
Totals	1263	650	1442	1261	626	1175	754	1410	987	868	1358	1572
Lander												
Battle Mountain No. 1	97	38	112	72	64	93	43	110	52	76	105	120
Battle Mountain No. 2	130	61	161	100	90	116	76	165	90	94	180	200
Copper Canyon	37	22	50	38	22	39	20	49	33	24	49	59
Hilltop	19	4	19	17	6	20	3	19	17	4	19	24
Lander	16	4	20	17	3	13	7	18	10	9	18	24
Cortez	7	3	10	7	3	7	3	10	7	2	9	12
Austin No. 1	106	23	112	88	60	81	69	116	87	46	106	120
Austin No. 2	112	31	111	106	33	96	52	108	73	60	104	119
Totals	524	191	596	445	271	455	283	596	369	315	572	660

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

County, and precinct	State Treasurer	State Controller	Surveyor- General	Attorney- General	Supt. State Printing	Supt. Public Instruction	Clerk Supreme Court					
Esmeralda	Malley, Ed, Democrat	No opponent	Deady, Charles L., Democrat	Liddell, Parker, Republican	Fowler, Leonard B., Democrat	Green, George S., Republican	Farnsworth, Joe, Democrat	No opponent	Bray, John Edwards, Nonpartisan	Hunting, W. J., Nonpartisan	Kennett, William, Democrat	No opponent
	118		101	50	91	66	126		86	67	129	
	204	125	171	126	165	139	222		132	163	224	
	130	243	103	60	105	69	139		86	77	182	
	104	144	86	42	87	52	112		63	63	109	
	64	57	57	24	42	23	67		38	22	66	
	15	6	14	6	13	7	18		9	10	17	
	12	19	8	8	5	9	10		7	6	9	
	23	13	20	12	20	13	27		11	24	26	
	34	20	20	33	28	23	42		15	39	36	
	25	13	19	13	14	20	22		8	26	24	
	39	18	34	23	27	26	40		23	29	40	
Totals	758	311	612	396	597	437	814	477	516	801		
Eureka	Eureka			89	78	126	137		103	89	141	
	Ruby Hill	116	160	109	8	4	9		8	6	7	
	Beowawe	6	8	5	18	19	10		14	34		
	Palisade	21	36	20	12	27	18		22	19	33	
	Mineral Hill	46	34	34	12	13	34		16	4	12	
	Alpha	12	9	14	6	13	7		13	16	7	
	Prospect	7	3	8	2	3	10		7	2	14	
	Three Bar	2	13	3	11	2	12		11	3	17	
	Diamond Valley	6	8	4	10	7	16		8	10	15	
	8	9	9	7	11	8	16		11	2	17	
	Totals	211	168	206	163	161	214	275	200	153	270	

Humboldt

Arroyo	8	7	7	7	1	6	1	7	11	11	7	11	7	11	17	7
Battle Creek	18	18	18	18	12	12	12	12	12	12	12	12	12	12	12	17
Barlett Creek	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	17
Buffalo Valley	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	17
Clover Valley	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	68
Golconda	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	68
Humboldt	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	64
Imley	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	64
Jackson Creek	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	64
Jungo	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	9
Kennedy	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	14
Lower Rochester	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	7
Lovelock	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	37
McDermitt	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	171
Medford	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	33
Malibu	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7
Masuma	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	14
Mill City	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	14
National	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	23
Oreana	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	11
Packard	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	20
Paradise	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	45
Pueblo	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	59
Rebel Creek	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	7
Rochester	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	14
Sulphur	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	13
South Lovelock	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	154
Tungsten	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	33
Toulon	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	9
Unionville	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	20
Willow Point	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	13
Winnemucca	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	177
West Winnemucca	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Totals	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263	1358

Lander

Battle Mountain No. 1	97	38	112	72	64	93	43	110	82	76	106	106
Battle Mountain No. 2	180	61	161	100	90	116	76	165	100	94	160	160
Copper Canyon	37	22	50	38	22	39	20	49	33	24	49	49
Hilltop	19	4	19	17	6	20	3	19	17	4	19	19
Lander	16	4	20	17	3	13	7	18	10	9	18	18
Cortez	7	3	10	7	3	7	3	10	7	2	9	9
Austin No. 1	106	28	112	88	60	81	59	116	87	46	106	106
Austin No. 2	112	31	111	106	33	86	82	108	73	60	104	104
Totals	524	191	596	446	271	455	263	596	369	315	572	572

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

County, and precinct	State Treasurer	State Controller	Surveyor- General		Attorney- General		Supt. State Printing		Supt. Public Instruction		Clerk Supreme Court	
			Deady, Charles L., Democrat	Liddell, Parker, Republican	Fowler, Leonard B., Democrat	Green, George S., Republican	Farnsworth, Joe, Democrat	No opponent	Bray, John Edwards, Nonpartisan	Hunting, W. J., Nonpartisan	Kennett, William, Democrat	No opponent
Lincoln												
Pioche	131	131	124	36	121	39	126		87	67	129	
Eagle Valley	24	20	22	4	23	2	23		17	8	23	
Deer Lodge	6	6	6	3	7	2	7		6	2	6	
Spring Valley	4	6	3	3	5	1	5		1	5	6	
Camp Valley	6	3	6	3	6	3	8		2	6	8	
Atlanta	9	12	10	2	9	3	10		7	4	12	
Geyser	5	6	6	0	4	2	6		2	3	5	
Panaca	88	86	81	25	73	32	74		43	60	75	
Caliente	113	123	115	24	117	23	117		83	33	112	
Elgin	7	8	7	1	7	1	8		5	2	8	
Clover Valley	11	14	10	5	11	4	15		10	5	15	
Hiko	10	23	10	17	9	17	26		10	15	26	
Alamo	83	88	82	8	26	10	83		13	18	36	
Groom	13	14	14	0	15	0	14		8	4	14	
Totals	455	496	446	131	433	139	471		304	232	475	
Lyon												
East Mason Valley	144	208	134	121	91	174	210		70	188	186	
West Mason Valley	114	165	106	104	68	150	145		50	155	146	
Sprague	95	143	85	99	87	103	135		73	100	132	
Plummer	49	62	51	23	36	38	60		25	48	54	
Wabusta	60	74	54	39	47	56	80		24	69	65	
Thompson	45	53	41	21	27	36	55		35	23	57	
Dayton	62	61	67	33	39	59	61		38	58	59	
Silver City	57	55	55	18	34	43	64		38	37	44	
Mound House	6	9	6	6	3	11	12		3	10	7	
Canal	51	69	40	47	48	40	61		38	47	67	
Smith Valley	27	54	31	31	25	41	53		14	45	49	
Simpson	17	40	25	26	10	42	42		14	36	40	
Ludwig	25	39	21	23	22	25	39		24	20	39	
Artesia	10	12	10	0	2	2	3		2	2	3	

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

County, and precinct	State Treasurer		State Controller		Surveyor-General		Attorney-General		Supt. State Printing		Supt. Public Instruction		Clerk Supreme Court	
	Malley, Ed., Democrat	Pruett, William E., Republican	Oole, Geo. A., Democrat	No opponent	Deady, Charles L., Democrat	Liddell, Parker, Republican	Fowler, Leonard B., Democrat	Green, George S., Republican	Farnsworth, Joe, Democrat	No opponent	Bray, John Edwards, Nonpartisan	Hunting, W. J., Nonpartisan	Kennett, William, Democrat	No opponent
Ormsby														
Carson City No. 1	226	122	249		231	116	159	186	255		116	216	247	
Carson City No. 2	186	122	228		211	106	134	178	247		120	188	229	
Carson City No. 3	194	96	201		218	74	114	173	219		101	182	201	
Totals	615	340	678		660	296	407	537	721		337	591	677	
Storey														
Virginia City No. 1	120	57	135		107	70	120	56	133		66	108	108	
Virginia City No. 2	108	39	115		93	47	95	51	118		64	85	108	
Virginia City No. 3	136	78	159		117	88	116	96	177		74	135	132	
Gold Hill	64	44	72		54	52	48	61	82		28	74	62	
Truckee River	10	7	14		9	8	8	8	14		10	5	13	
Totals	433	225	496		380	265	387	272	524		232	407	423	
Washoe														
Reno First	204	165	280		174	181	114	253	286		150	203	273	
Reno Second	175	172	282		154	186	138	212	270		146	185	254	
Reno Third	181	146	251		150	165	121	204	252		109	204	239	
Reno Fourth	145	90	196		122	103	121	115	190		106	112	189	
Reno Fifth	156	127	219		130	143	108	178	205		120	163	192	
Reno Sixth	146	137	207		151	130	118	172	210		128	161	203	
Reno Seventh	139	120	189		134	128	107	187	194		126	180	191	
Reno Eighth	164	135	219		148	120	149	142	229		145	125	219	
Reno Ninth	145	71	166		125	81	129	90	163		123	68	182	
Reno Tenth	139	147	213		136	145	125	173	217		146	141	205	
Reno Eleventh	126	151	232		136	132	110	175	230		104	176	221	
Reno Twelfth	187	166	272		176	168	162	190	287		171	167	283	

Reno Thirtieth	141	149	155	156	161	174	118	160	205	111	148	192
Reno Twenty-ninth	142	150	157	158	162	165	119	161	206	101	149	193
Reno Fifteenth	143	151	158	159	163	166	120	162	207	102	150	194
Reno Sixteenth	144	152	159	160	164	167	121	163	208	103	151	195
Sparks First	145	153	160	161	165	168	122	164	209	104	152	196
Sparks Second	146	154	161	162	166	169	123	165	210	105	153	197
Sparks Third	147	155	162	163	167	170	124	166	211	106	154	198
Verdi	148	156	163	164	168	171	125	167	212	107	155	199
Wadsworth	149	157	164	165	169	172	126	168	213	108	156	200
Frontown	150	158	165	166	170	173	127	169	214	109	157	201
Huffakers	151	159	166	167	171	174	128	170	215	110	158	202
Bald Mountain	152	160	167	168	172	175	129	171	216	111	159	203
Pyramid	153	161	168	169	173	176	130	172	217	112	160	204
Gerlach	154	162	169	170	174	177	131	173	218	113	161	205
Salt Marsh	155	163	170	171	175	178	132	174	219	114	162	206
Leadville	156	164	171	172	176	179	133	175	220	115	163	207
Washoe	157	165	172	173	177	180	134	176	221	116	164	208
Duck Lake	158	166	173	174	178	181	135	177	222	117	165	209
Flanigan	159	167	174	175	179	182	136	178	223	118	166	210
Totals	3138	2612	4449	2913	2643	2632	3174	4480	2681	2567	4322	
White Pine												
Ely No. 1	260	77	264	232	80	209	123	242		174	126	239
Ely No. 2	257	80	258	230	85	213	116	255		159	135	234
Ely No. 3	169	76	190	146	83	142	96	206		100	130	188
Osceola	5	6	8	9	8	1	11	6		9	2	7
Cherry Creek	36	13	44	39	11	36	14	43		25	23	38
Snake Valley	25	10	32	23	11	25	11	29		19	15	28
Newark	9	3	9	10	1	8	3	8		6	4	9
Preston	43	13	52	39	18	35	20	54		25	32	62
Lane City	10	8	14	13	6	12	6	15		10	7	14
Hamilton	25	19	33	23	15	20	22	37		32	11	32
Lund	36	9	32	23	14	29	13	32		12	36	29
U. S. Tungsten	10	2	10	10	2	10	2	11		1	10	11
Melvin	9	8	11	8	8	8	7	12		6	9	10
Ruth	161	74	200	160	68	154	85	208		109	113	192
Ely City	150	98	198	144	97	132	115	205		125	99	189
Pleasant Valley	8	3	11	6	4	7	3	11		8	3	10
Muncy	15	11	19	12	13	11	15	20		17	7	18
Smelter No. 1	254	145	312	209	162	244	148	310		167	188	281
Smelter No. 2	134	58	163	119	65	127	66	165		79	98	151
Tippett	2	11	12	3	10	3	10	13		10	3	12
Kimberly	111	29	109	96	40	89	51	108		82	84	104
Taft	117	12	23	16	12	12	17	24		12	11	22
Bothwick	6	0	5	6	6	6	6	6		6	0	6
Shoshone	3	8	7	5	6	4	6	9		3	8	8
Totals	1755	771	2016	1575	814	1637	959	2025		1196	1104	1884

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

County, and precinct	Inspector of Mines		University Regent—10 year term		University Regent—8 year term		University Regent—6 year term		Initiative Petition No. 1	
	Burns, Wm. A., Democrat	Stinson, Andy J., Republican	North, Miles E., Nonpartisan	No opponent	Hood, Eunice E., Nonpartisan	No opponent	Pratt, Walter E., Nonpartisan	No opponent	Yes	No
Churchill										
New River No. 1	45	49	62		63		60		60	34
New River No. 2	45	80	90		84		84		84	38
New River No. 3	97	119	160		144		144		151	81
New River No. 4	122	144	174		187		175		188	97
Hazen	35	52	58		66		57		58	28
Fanning	8	4	9		8		9		11	1
St. Clair	77	94	128		127		125		128	41
Harmon	31	42	54		54		55		65	17
Stillwater	43	22	47		41		40		43	24
Dixie	3	4	5		5		5		10	1
Wonder	54	34	58		55		56		59	26
White Rock	4	5	8		7		6		6	4
Totals	564	649	843		842		816		863	392
Clark										
Nelson	11	22	27		26		28		17	13
Searchlight	45	30	60		56		62		37	31
Crescent	2	4	5		5		5		4	2
Goodsprings	82	68	108		108		112		75	53
Arden	9	6	11		10		13		9	5
Indian Springs	8	4	11		11		11		7	5
Las Vegas No. 1	154	174	210		203		214		178	129
Las Vegas No. 2	189	147	248		245		250		213	103
Moapa	26	8	27		25		25		24	9
Logandale	21	10	28		26		26		33	3
Overton	53	29	70		69		70		70	6
St. Thomas	33	20	43		44		45		35	3
Bunkerville	40	31	64		62		67		66	1
Mesquite	39	18	48		49		51		44	1
Potosi	3	5	8		8		8		7	0
Totals	715	577	968		948		987		819	364
Douglas										
East Fork	85	170	161		153		160		102	97
Genoa	31	61	51		52		59		45	37
Mottaville	16	54	48		50		52		33	30
Jacks Valley	2	15	14		14		15		8	7
Minden	28	84	72		78		76		73	27
Totals	162	384	346		347		362		261	198

OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

ct	Inspector of Mines		University Regent— 10 year term	University Regent— 8 year term	University Regent— 6 year term	Initiative Petition No. 1			
	Burns, Wm. A., Democrat	Stinson, Andy J., Republican	North, Miles E. Nonpartisan	No opponent	Hood, Eunice E., Nonpartisan	No opponent	Pratt, Walter E., Nonpartisan	Yes	No
	7	9	10		10		12	1	4
	1	5	6		6		6	9	7
	74	81	114		118		109	98	47
	1	13	9		10		9	9	3
	12	33	32		34		31	41	8
	12	1	12		11		12	2	11
	22	16	27		26		29	19	22
	7	9	14		14		15	6	9
	58	110	113		115		114	91	74
	51	76	96		104		98	91	29
	43	79	90		93		91	88	23
	122	166	181		185		181	166	88
	4	5	5		4		5	6	1
	9	6	9		9		9	6	7
	5	6	9		9		11	1	13
	17	9	23		21		22	6	17
	5	7	8		8		9	8	3
	63	54	92		89		93	73	51
	29	68	81		78		81	74	20
	6	9	12		11		13	9	7
	27	42	65		64		63	77	3
	56	36	67		69		66	52	34
	33	29	37		40		38	45	17
	6	6	6		7		7	13	2
	17	14	23		22		21	21	12
	20	16	26		24		28	32	11
	16	16	23		23		28	21	13
	6	11	13		13		12	7	10
	2	9	8		7		7	4	5
	6	26	21		23		22	23	6
	7	1	6		6		7	3	3
	11	22	24		26		26	23	5
	38	94	96		96		99	95	30
	9	6	14		13		16	9	5
	5	2	7		7		7	6	1
	8	4	11		12		12	12	4
	43	45	70		72		74	50	27
	3	5	3		4		4	4	1
	38	82	84		89		82	87	31
	11	0	11		11		11	0	12
	7	11	12		11		13	11	6
	922	1239	1575	1597	1593	1399	682		
	92	65	115	115	129	68	69		
	143	164	212	214	236	103	157		
	96	70	121	114	131	63	80		
	70	63	96	94	108	37	81		
	33	31	50	50	52	17	35		
	14	7	16	16	16	8	6		
	7	9	11	10	10	0	0		
	11	19	25	26	26	12	12		
	21	33	39	40	41	44	9		
	12	24	23	23	24	18	10		
	28	28	37	37	44	20	30		
	527	513	744	789	817	390	489		

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

County, and precinct	Inspector of Mines		University Regent— 10 year term	University Regent— 8 year term	University Regent— 6 year term	Initiative Petition No. 1				
	Burns, Wm. A., Democrat	Stinson, Andy J., Republican	North, Miles E., Nonpartisan	No opponent	Hood, Eunice E., Nonpartisan	No opponent	Pratt, Walter E., Nonpartisan	No opponent	Yes	No
Eureka										
Eureka	48	151	117		118		117		108	79
Ruby Hill	0	13	9		9		9		12	0
Beowawe	14	22	24		24		23		20	10
Palisade	15	28	23		36		42		23	24
Mineral Hill	12	9	12		10		13		11	0
Alpha	5	6	9		9		10		3	0
Prospect	1	12	13		12		12		0	13
Three Bar	4	10	10		10		10		0	14
Diamond Valley	3	15	18		15		15		9	0
Totals	102	266	240		243		251		186	165
Humboldt										
Amos	7	0	7		7		7		3	4
Adelaide	12	3	8		9		8		7	12
Bartlett Creek	13	8	17		16		17		7	12
Buffalo Valley	7	0	7		7		7		6	4
Clover Valley	6	5	5		5		7		4	3
Golconda	34	58	57		56		58		51	39
Humboldt	3	9	12		13		12		1	4
Imlay	32	42	58		56		58		39	24
Jackson Creek	5	3	7		7		7		3	4
Jungo	6	7	13		12		12		6	8
Kennedy	7	1	8		8		8		4	3
Lower Rochester	22	21	28		29		30		19	20
Lovelock	96	166	178		183		180		176	67
McDermitt	18	17	27		27		30		10	27
Majuba	1	6	6		6		6		7	1
Maxuma	8	6	12		12		11		9	4
Mill City	18	11	22		24		24		19	7
National	8	8	11		12		13		12	3
Oreana	14	10	20		18		21		11	6
Packard	40	16	37		40		36		30	20
Paradise	32	59	60		61		64		54	20
Pueblo	5	7	5		9		6		3	11
Rebel Creek	6	9	12		12		13		12	0
Rochester	63	41	65		63		68		51	32
Sulphur	5	8	12		12		12		10	3
South Lovelock	101	136	138		148		141		132	97
Tungsten	27	25	35		32		32		28	20
Toulon	6	4	8		8		9		8	3
Unionville	11	17	21		21		21		21	3
Willow Point	2	11	13		14		13		10	3
Winnemucca	116	141	176		177		181		143	113
West Winnemucca	169	145	190		186		198		140	156
Totals	900	1000	1275		1290		1310		1086	730
Lander										
Battle Mountain No. 1	74	62	99		91		91		73	52
Battle Mountain No. 2	81	107	142		141		134		102	81
Copper Canyon	31	26	37		39		37		45	8
Hilltop	16	6	16		14		14		13	4
Lander	10	10	17		16		18		14	3
Cortez	6	3	9		8		8		6	3
Austin No. 1	52	77	76		74		73		34	77
Austin No. 2	59	77	96		97		94		82	47
Totals	329	368	483		490		467		369	272

OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

Inspector of Mines		University Regent— 10 year term	University Regent— 8 year term	University Regent— 6 year term	Initiative Petition No. 1	
Burns, Wm. A., Democrat	Stinson, Andy J., Republican	No opponent	No opponent	No opponent	Yes	No
113	51	109	105	110	84	50
22	3	18	18	18	14	3
6	4	7	7	6	3	6
4	2	6	4	4	2	3
4	3	8	8	8	5	3
7	3	9	10	10	8	0
6	0	4	6	4	5	1
64	40	69	67	67	68	14
102	35	97	90	95	68	63
7	1	7	7	7	5	0
11	4	13	14	14	12	0
9	17	22	22	24	20	6
28	11	29	28	31	38	2
13	0	11	10	11	9	7
395	174	408	396	409	341	158
89	170	184	180	188	160	89
71	139	140	140	138	127	76
78	109	129	131	132	116	65
43	31	55	57	57	55	14
42	55	61	57	63	49	46
41	22	49	50	52	38	19
31	68	54	52	54	45	55
38	40	45	46	45	24	50
6	7	8	9	9	8	4
30	53	58	55	58	83	13
27	34	51	51	48	52	9
10	41	43	43	44	42	7
16	30	38	40	40	37	9
8	6	11	10	11	12	2
530	805	921	921	939	848	458
18	10	17	16	17	17	8
7	15	14	14	15	16	3
14	5	11	13	10	11	7
45	63	63	64	74	53	41
1	7	6	7	6	2	5
49	24	36	39	37	36	35
83	82	109	107	114	80	72
4	1	4	4	4	0	5
24	11	24	24	23	27	9
21	7	23	20	20	14	8
6	6	11	13	11	4	8
9	12	12	12	13	6	11
9	7	13	14	15	16	1
12	5	14	10	10	11	10
5	24	22	22	22	19	5
7	6	12	12	10	8	4
314	285	391	391	401	320	232

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918—*Continue*

County, and precinct	Inspector of Mines		University Regent—10 year term		University Regent—8 year term		University Regent—8 year term		In P
	Burns, Wm. A., Democrat	Stinson, Andy J., Republican	North, Miles E., Nonpartisan	No opponent	Hood, Eunice E., Nonpartisan	No opponent	Pratt, Walter E., Nonpartisan	No opponent	Yes
Nye									
Tonopah No. 1	135	208	239	-----	235	-----	233	-----	154
Tonopah No. 2	104	199	197	-----	182	-----	189	-----	136
Tonopah No. 3	74	140	161	-----	167	-----	158	-----	132
Tonopah No. 4	114	97	143	-----	136	-----	135	-----	126
Tonopah No. 5	177	204	265	-----	255	-----	254	-----	229
Manhattan	100	92	145	-----	124	-----	125	-----	101
Round Mountain	74	40	80	-----	75	-----	74	-----	55
Carrara	4	7	5	-----	7	-----	10	-----	11
Ione	28	17	33	-----	32	-----	32	-----	26
Duckwater	14	12	15	-----	15	-----	13	-----	21
Belmont	21	18	30	-----	29	-----	26	-----	27
Rhyolite	4	15	12	-----	12	-----	12	-----	13
Beatty	19	16	24	-----	23	-----	22	-----	17
Current	6	12	16	-----	15	-----	14	-----	16
Sharp	4	10	13	-----	13	-----	13	-----	7
Golden Arrow	7	2	6	-----	6	-----	6	-----	0
Tybo	3	1	5	-----	4	-----	4	-----	4
Smokey Valley	11	11	17	-----	16	-----	15	-----	15
Bruner	5	11	12	-----	13	-----	12	-----	16
Sunnyside	3	10	10	-----	12	-----	12	-----	10
Blue Eagle	2	7	8	-----	8	-----	7	-----	9
Johnnie	10	8	15	-----	13	-----	13	-----	11
Pioneer	7	19	21	-----	20	-----	22	-----	16
Nysa	3	1	4	-----	3	-----	4	-----	0
Ash Meadows	8	4	11	-----	13	-----	12	-----	7
Grantsville	6	5	7	-----	7	-----	7	-----	2
Keystone	2	15	14	-----	12	-----	14	-----	11
Totals	945	1179	1508	-----	1437	-----	1438	-----	1172
Ormsby									
Carson City No. 1	119	218	202	-----	200	-----	207	-----	137
Carson City No. 2	114	192	210	-----	213	-----	208	-----	161
Carson City No. 3	93	190	192	-----	187	-----	188	-----	149
Totals	326	600	604	-----	600	-----	603	-----	447
Storey									
Virginia City No. 1	94	82	109	-----	107	-----	107	-----	58
Virginia City No. 2	89	56	100	-----	94	-----	96	-----	27
Virginia City No. 3	123	86	129	-----	117	-----	122	-----	71
Gold Hill	55	55	63	-----	62	-----	59	-----	21
Truckee River	7	8	11	-----	13	-----	11	-----	10
Totals	368	287	412	-----	393	-----	395	-----	187

OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

	Inspector of Mines	University Regent— 10 year term	University Regent— 8 year term	University Regent— 6 year term	Initiative Petition No. 1					
	Burns, Wm. A. Democrat	Simson, Andy J., Republican	North, Miles E., Nonpartisan	No opponent	Hood, Eunice E., Nonpartisan	No opponent	Pratt, Walker E., Nonpartisan	No opponent	Yes	No
104	280	283			273		260		215	128
122	226	243			241		244		196	128
133	184	232			245		229		160	143
110	125	184			192		177		120	102
109	181	198			198		193		173	103
112	171	200			206		200		153	136
96	171	178			177		172		128	129
106	184	210			211		201		128	153
87	131	136			124		129		48	167
103	186	225			223		218		179	111
105	176	227			236		228		194	94
141	223	267			260		244		172	154
98	178	201			204		197		162	106
106	133	182			173		175		145	91
112	96	137			119		133		82	120
122	116	181			177		183		107	131
134	133	201			202		198		192	80
125	125	192			193		183		152	98
132	119	189			188		184		169	77
56	75	100			99		95		66	58
29	64	69			67		64		41	35
5	21	19			19		20		10	13
20	30	36			37		36		24	22
11	23	26			26		24		18	12
3	6	8			8		8		4	4
35	27	49			48		48		32	19
4	15	15			17		17		15	3
7	3	9			9		8		9	1
38	8	34			35		34		20	23
9	7	11			7		9		11	3
3	3	6			6		6		1	5
	2377	3400	4248		4220		4112		3126	2449
158	176	213			202		215		131	191
158	166	191			173		180		130	194
105	135	159			152		158		149	76
1	11	10			10		10		5	7
16	35	32			30		33		26	22
16	26	26			20		22		26	10
7	4	6			6		7		6	6
28	29	51			50		50		52	5
11	6	12			12		11		13	7
10	34	35			35		34		18	22
21	18	31			31		30		50	4
9	3	11			11		11		8	2
6	10	14			13		13		8	5
123	108	178			175		184		129	89
103	139	189			173		182		180	53
5	6	11			11		9		4	6
10	16	20			19		19		12	11
228	158	266			262		264		273	92
110	76	144			136		138		142	44
4	9	12			12		12		5	7
70	65	85			82		82		83	51
10	17	20			20		19		23	8
3	2	6			6		6		3	2
4	7	10			9		10		8	2
	1221	1256	1724		1650		1699		1484	916

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918,—Continued

Judge, First Judicial District

County, and precinct	F. P. Langan, Nonpartisan	Nonpartisan
Douglas		
East Fork	211	5
Genoa	57	4
Mottaville	48	1
Jacks Valley	9	
Minden	82	2
Ormsby		
Carson City No. 1	153	18
Carson City No. 2	129	17
Carson City No. 3	121	15
Storey		
Virginia City No. 1	120	5
Virginia City No. 2	113	3
Virginia City No. 3	160	5
Gold Hill	80	3
Truckee River	14	
Totals	1297	84

Judges, Second Judicial District

County, and precinct	Geo. A. Bartlett, Nonpartisan	E. F. Lunsford, Nonpartisan	Hub. F. Auman, Nonpartisan
Washoe			
Reno First	290	131	17
Reno Second	190	171	21
Reno Third	209	145	19
Reno Fourth	123	123	14
Reno Fifth	189	139	16
Reno Sixth	132	141	22
Reno Seventh	156	115	15
Reno Eighth	169	147	17
Reno Ninth	114	120	11
Reno Tenth	154	153	21
Reno Eleventh	133	168	19
Reno Twelfth	186	178	22
Reno Thirteenth	140	170	18
Reno Fourteenth	126	127	17
Reno Fifteenth	100	115	14
Reno Sixteenth	105	146	17
Sparks First	92	139	18
Sparks Second	73	132	18
Sparks Third	72	142	19
Verdi	22	107	10
Wadsworth	37	54	5
Franktown	8	11	1
Huffakers	17	26	4
Bald Mountain	10	26	1
Pyramid	2	6	1
Gerlach	32	41	2
Salt Marsh	6	16	1
Leadville	1	9	1
Washoe	27	29	21
Duck Lake	2	15	1
Planigan	5	1	1
Totals	2922	3043	374

NS OF THE ELECTION HELD NOVEMBER 5, 1918—Continued

Judge, Third Judicial District

County. and precinct	Peter Breen, Nonpartisan...	No opponent
Eureka	118	
-----	10	-----
-----	32	-----
-----	26	-----
-----	12	-----
-----	7	-----
-----	12	-----
-----	7	-----
-----	12	-----

Lander	101	-----
-----	147	-----
-----	46	-----
-----	14	-----
-----	16	-----
-----	9	-----
-----	111	-----
-----	110	-----
-----	789	-----

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918,—Continued

Judge, Fourth Judicial District

County, and precinct	Ja. Dyart, Nonpartisan	E. J. L. 1807, Nonpartisan
Elko		
Butte Valley	2	10
Bryan	3	1
Carlin	33	12
Cloverdale	2	10
Clover Valley	5	4
Columbia	10	2
Contact	16	2
Deep Creek	5	1
Elko No. 1	54	13
Elko No. 2	57	7
Elko No. 3	36	9
Elko No. 4	81	23
Fort Halleck	1	
Halleck	6	10
Huntington	1	1
Island Mountain	4	2
Jack Creek	0	1
Jarbridge	37	9
Lamoille	15	9
Mardis	5	4
Metropolis	2	8
Midas	25	6
Montello	4	5
Mound Valley	5	1
Mountain City	5	3
North Fork	6	3
North Ruby	3	2
O'Neill	7	1
Railroad	7	
Ruby Valley	0	3
Shafter	0	
South Fork	9	2
Starr Valley	18	11
Tecoma	0	10
Toano	0	
Tobar	8	
Tuscarora	34	5
Weiland	2	
Wells	81	9
West Wendover	3	1
White Rock	4	1
Totals	546	171

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918,—Continued

Judge, Fifth Judicial District

County, and precinct		M. R. Averill, Nonpartisan...	No opponent
Hye			
Yampah No. 1.....		224	
Yampah No. 2.....		259	
Yampah No. 3.....		176	
Yampah No. 4.....		174	
Yampah No. 5.....		300	
Kanabasis.....		146	
Round Mountain.....		94	
Carson.....		10	
Ham.....		33	
Jackwater.....		12	
Schmidt.....		37	
Styobite.....		18	
Beatty.....		34	
Carson.....		13	
Shay.....		13	
Golden Arrow.....		9	
Lyda.....		5	
Smoky Valley.....		18	
Brace.....		12	
Sunnyside.....		11	
Eye Eagle.....		8	
Jordan.....		14	
Prater.....		24	
Nyala.....		3	
Ant Meadows.....		10	
Conoverville.....		1	
Keystone.....		15	
Total.....		1733	

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918,—Continued

Judge, Sixth Judicial District

County, and precinct	J. A. Cullahan, Nonpartisan
<p style="text-align: center;">Humboldt</p> <p>Amos 7</p> <p>Adelaide 13</p> <p>Bartlett Creek 14</p> <p>Buffalo Valley 7</p> <p>Clover Valley 7</p> <p>Golconda 65</p> <p>Humboldt 9</p> <p>Imlay 47</p> <p>Jackson Creek 9</p> <p>Jungo 9</p> <p>Kennedy 4</p> <p>Lower Rochester 30</p> <p>Lovelock 198</p> <p>McDermitt 36</p> <p>Majuba 5</p> <p>Masuma 11</p> <p>Mill City 20</p> <p>National 10</p> <p>Oreana 17</p> <p>Packard 43</p> <p>Paradise 96</p> <p>Pueblo 7</p> <p>Rebel Creek 13</p> <p>Rochester 66</p> <p>Sulphur 7</p> <p>South Lovelock 173</p> <p>Tungsten 23</p> <p>Toulon 4</p> <p>Unionville 25</p> <p>Willow Point 11</p> <p>Winnemucca 196</p> <p>West Winnemucca 223</p> <p>Totals 1419</p>	

OF THE ELECTION HELD NOVEMBER 5, 1918,—*Continued*

Judge, Seventh Judicial District

County, and precinct	J. E. Walsh, Nonpartisan...	No opponent.....
Esmeralda	131 254 133 128 60 19 13 30 47 24 49	
Mineral	25 16 14 93 7 53 136 5 24 24 12 17 12 16 26 11	
	1381	

OFFICIAL RETURNS OF THE ELECTION HELD NOVEMBER 5, 1918,—Continued

Judge, Eighth Judicial District

County, and precinct		F. O. Hartman Nonpartisan
Churchill		
New River No. 1.....		84
New River No. 2.....		113
New River No. 3.....		194
New River No. 4.....		238
Hazen.....		76
Fanning.....		10
St. Clair.....		151
Harmon.....		66
Stillwater.....		58
Dixie.....		6
Wonder.....		66
White Rock.....		8
Lyon		
East Mason Valley.....		207
West Mason Valley.....		171
Spragg.....		140
Plummer.....		59
Wabaska.....		81
Thompson.....		56
Dayton.....		64
Silver City.....		60
Mound House.....		7
Canal.....		65
Smith Valley.....		54
Simpson.....		45
Ludwig.....		42
Artesia.....		12
Total.....		2139

Judge, Ninth Judicial District

County, and precinct		Anthony Jurich Nonpartisan
White Pine		
Ely No. 1.....		136
Ely No. 2.....		121
Ely No. 3.....		58
Osceola.....		4
Cherry Creek.....		20
Snake Valley.....		7
Newark.....		8
Preston.....		8
Lane City.....		0
Hamilton.....		12
Lund.....		4
U. S. Tungsten.....		1
Melvin.....		1
Ruth.....		120
Ely City.....		60
Pleasant Valley.....		2
Muncy.....		3
Smelter No. 1.....		101
Smelter No. 2.....		58
Tippett.....		2
Kimberly.....		46
Taft.....		4
Bothwick.....		1
Shoshone.....		2
Totals.....		778

OF THE ELECTION HELD NOVEMBER 5, 1918,—Continued

Judge, Tenth Judicial District

County, and precinct	O. D. Breese, Nonpartisan...	Wm. E. Orr, Nonpartisan...
Clark		
.....	12	20
.....	30	49
.....	1	6
.....	100	57
.....	6	10
.....	12	0
.....	240	116
.....	217	163
.....	24	14
.....	22	20
.....	48	47
.....	36	16
.....	44	31
.....	37	26
.....	7	1
Lincoln		
.....	40	134
.....	2	24
.....	1	8
.....	1	5
.....	1	7
.....	1	11
.....	1	4
.....	20	89
.....	31	115
.....	2	6
.....	7	8
.....	11	15
.....	8	32
.....	3	14
.....	965	968

SUMMARY OF THE VOTE

Offices and names of candidates	Counties															Plurality or Majority.....	
	Churchill.....	Clark.....	Douglas.....	Elko.....	Esmeralda.....	Eureka.....	Humboldt.....	Lander.....	Lincoln.....	Lyon.....	Mineral.....	Nye.....	Ormsby.....	Storey.....	Washoe.....	White Pine.....	Totals.....
<i>United States Senator—</i> Henderson, Charles B.....	501	784	207	1668	468	202	886	353	354	575	270	1123	408	326	2463	1615	12,197
Martin, Anne.....	445	346	87	270	222	56	520	165	111	296	155	411	51	63	900	515	4,603
Roberts, E. E.....	429	280	288	431	371	134	627	223	141	484	304	267	498	271	2647	475	8,053
Scanlan, Martin J.....	38	25	6	28	40	16	42	16	9	68	17	207	14	10	112	69	710
<i>Representative in Congress—</i> Cordill, H. H.....	115	94	14	116	62	7	94	39	13	91	31	315	27	13	174	172	1,377
Downer, Sylvester S.....	657	449	299	983	396	196	745	283	137	680	296	754	510	261	3293	801	10,660
Evans, Charles R.....	573	829	251	1321	632	182	1169	398	448	603	339	1166	415	388	2467	1599	12,670
<i>Governor—</i> Boyle, Emmet D.....	581	884	254	1226	515	174	1190	413	482	643	319	1120	507	398	2815	1604	12,875
Oddie, Tasker L.....	777	492	324	1056	567	215	812	323	170	736	312	1058	460	262	3534	942	11,845
<i>Lieutenant-Governor—</i> Sullivan, Maurice J.....	652	873	304	1353	307	204	1190	454	437	702	384	1331	580	425	3146	1633	14,475
Tilden, Augustus.....	587	434	248	803	370	171	704	247	136	635	222	781	361	226	2587	794	9,196
<i>Justice of the Supreme Court—</i> Ducker, Edward A.....	776	676	298	1012	431	126	1580	399	231	662	279	1040	483	185	3604	1219	12,101
McCarran, Patrick A.....	457	527	249	1199	532	236	535	236	241	689	315	1028	454	444	3170	1194	11,666
<i>Secretary of State—</i> Brodigan, George.....	695	865	353	1380	748	238	1243	494	433	842	427	1334	640	446	3251	1568	14,933
Ellis, Louise Spencer.....	605	448	213	889	328	120	667	213	147	518	139	777	308	300	2500	903	8,995
<i>State Treasurer—</i> Mailey, Ed.....	686	840	330	1446	768	211	1293	524	455	762	407	1350	615	433	3138	1755	14,933
Fruett, William E.....	551	455	224	764	311	168	660	191	123	576	304	814	340	225	2612	771	8,990
<i>State Controller—</i> Cole, Geo. A.....	938	1027	378	1723	854	282	1442	595	496	1050	436	1699	678	496	4449	2016	18,669
<i>Surveyor-General—</i> Deady, Charles L.....	617	778	316	1389	612	206	1261	445	446	729	374	1253	690	330	2913	1375	13,954
Liddell, Parker.....	585	459	236	770	396	163	626	271	131	593	298	846	260	285	2543	814	9,332
<i>Attorney-General—</i> Fowler, Leonard B.....	602	812	277	1390	527	161	1175	455	433	541	246	1199	407	387	2622	1337	12,711
Green, Georges.....	635	499	239	945	437	314	764	253	139	825	365	988	537	272	3174	959	11,245
<i>Superintendent of State Printing—</i>	537	1047	334	1390	814	275	1410	535	431	1027	444	1693	731	194	4180	9098	18,541



ROSTER

OF THE

strict Board, Local Boards, Legal Advisory Boards,
Medical Advisory Boards, and Government
Appeal Agents

IN THE

State of Nevada

APPOINTED UNDER THE

Selective Service Law

STATE OF NEVADA
OFFICE OF THE ADJUTANT GENERAL
CARSON CITY

July 10, 1918



CARSON CITY, NEVADA
PRINTING OFFICE : : JOE FARNSWORTH, SUPERINTENDENT
1918

STATE OF NEVADA THE ADJUTANT GENERAL'S OFFICE

CARSON CITY, NEVADA, July 10, 1918.

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CULTURAL EXPERIMENT STATION
THE UNIVERSITY OF NEVADA

July, 1918

GE PLANTS POISONOUS TO EP AND CATTLE IN NEVADA

By

C. E. FLEMING, B.S.A.,

Head of the Department of Range Management
Agricultural Experiment Station

SPANISH TRANSLATION

By

B. F. SCHAPPELLE, Ph.D.,

Assistant Professor of the Romanic Languages and Literatures
University of Nevada

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CARSON CITY, NEVADA

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S POISONOUS TO SHEEP AND CATTLE IN NEVADA

INTRODUCTION

Each grazing season brings the news that large numbers of sheep and cattle are poisoned on the sheep and cattle ranges. This ignorance on the part of the men actually handling the ranges is a failure to recognize our common poisonous plants. In the past the plant causing the loss was thought by the range men to be harmless. It is hoped that the facts presented in this publication, with the illustrations, will help to meet this need of the range men about deadly range plants.

The information presented in this publication was obtained from the following sources: (1) Feeding tests by Dr. Edward Records, of the Department of Veterinary Science, University of California, gave information about the symptoms shown by sheep eating lupine, rabbit brush, goldenrod, and other poisonous plants. (2) Studies by Dr. C. A. Jacobson, of the University of California, gave information about the nature of the poisonous matter in the range plants and the part of the plant which is poisonous. (3) Field observations made by the writer on ranges in the Western States gave much information upon the occurrence of poisonous range plants and their importance to the range man.

Forty per centage of our sheep herders are foreigners who do not speak English. A part of this bulletin has been translated into Spanish. The sole purpose of this publication is to give Nevada range men practical information, in simple language, about the poisonous plants which are responsible for the greater part of our range losses and to suggest methods of handling by which these losses may be avoided.

COMMON POISONOUS PLANTS OF NEVADA

Of Nevada seven groups of plants cause most of the poisoning. They are: Death Camas, Larkspurs, Waterhellebores, Lupines, Western Goldenrod, and the Locos. The most dangerous are: False Hellebore, Wild Cherry, and the groups which contain several kinds or species, but the most dangerous and poisonous properties are much the same. It is difficult to distinguish them on the range.

They may fairly be called poisonous plants; that is, they cause serious illness or death, either immediately, or else by the cumulative action of the poison contained in

LARKSPURS

(*Delphinium* Spp.)

Description of the Plant.

There are two kinds of larkspur on the Nevada ranges; they are called tall larkspur and small larkspur, the latter being sometimes known as purple larkspur.

The tall larkspurs are erect branching plants from two to six feet high. The roots are large and deep set, more or less woody, supporting one or more crowns from which the stems are produced. A leaf is shown in Figure 1; all the divisions or main ribs spread out from the end of the leaf stem like a hand with outstretched fingers. The flowers of the poisonous larkspurs are of various tints of blue or purple, and have a very characteristic shape, due to the development of a spur-like structure on the upper sepal as shown in Figure 2.



Figure 1. Left-hand leaf, larkspur; Center, geranium; Right-hand leaf, monkshood.

The small larkspurs have single stems or at the most only a few. On the Nevada ranges they grow from 9 to 12 inches tall. The typical small larkspur is shown in Plate I.

Distribution and Habitat.

Larkspurs are found on practically every range for cattle and sheep in the northern half of Nevada. Due to the extreme dryness in the southern half, the larkspurs are scarce, and do not cause serious losses.

The tall larkspurs grow in well-drained, moist, loamy areas along the creek bottoms, in the mountain parks, or in the clumps and groves of quaking aspen which are so common on the most valuable range in the eastern part of the State. They grow at altitudes ranging from 4,000 to 11,000 feet.

The small larkspur grows on range varying between 3,000 and 7,000 feet in altitude, where the soil is well drained, not excessively moist.

sunlight. Thus our mountain foothills and the high range form the typical country of the small grow, however, to as high an elevation as the tall. It is a typical plant of the weed and park areas of the mountains. However, it is not much of a menace on the mountain because it is not abundant in the whole mass of the forest, and there is little chance that an animal will eat

are Commonly Mistaken for Larkspur.

with which the larkspurs are most commonly confused are the pink geranium and the aconite. When the pink geranium is in its spring growth it resembles the tall larkspur. However, on the lowest part of the stem of the leaf of the geranium are the two small pointed appendages which are shown on figure 1; and these are not present on the leaf stem of



left, flower of larkspur; right hand, flower of monkshood.

When, upon squeezing the geranium leaf it usually produces a strong geranium odor which, of course, is not present in the aconite. The geranium leaf is usually covered with a growth of fine hairs, while the leaves of the larkspur are usually smooth. The surface coating easily rubbed off, much like that of the aconite.

The monkshood as it is sometimes called, differs from the larkspur in that the upper leaves of the aconite plant are much larger and the leaves have very short stems as shown on the left of figure 1. Instead of the flowers being spurred as in the larkspur, they are hooded as shown in the right-hand flower of figure 1. This is the common name of monkshood.

Set for the time in the spring when the larkspur is in full bloom on the lower elevations usually commencing the latter part of April and, if the moisture is sufficient, it will last until late in August or early in September. At an increase in elevation of 1,000 feet the growth of

the larkspur plant is retarded by from ten days to two weeks. To a kind of larkspur which might be in bloom on a 5,000-ft. range July 15 would not be in bloom on a 6,000-ft. range much before August 1.

In a dry hot season, in Nevada, the larkspurs will start growth, later



Figure 3. Geranium. This plant is commonly confused with the tall larkspur during early spring.

som, and ripen their seeds much earlier than if the season were cold and cold; evidently climatic conditions have a very important influence upon the length of the time when larkspurs are capable of causing damage on the range.

On an average the small larkspur comes into bloom from six weeks to two months earlier than the tall larkspur. The small larkspurs are essentially early blooming and early maturing plants. They soon die to the ground after producing flowers and seeds, and cease to be dangerous late in the spring.

Animals Which Are Poisoned.

Sheep. From all field observations and feeding tests it can be safely stated that the larkspurs have no ill effects on sheep. On the other hand, they are more or less palatable, depending upon the variety and abundance of other species with which they are found growing.

Horses. Under ordinary range conditions horses do not relish larkspurs and they seldom eat enough at any one time to cause serious trouble.

Cattle. The larkspur in Nevada probably causes more loss among cattle than all other poisonous plants. Each year on most of our cattle ranges a large number of animals are fatally poisoned by larkspur.

Amount Necessary to Cause Death.

The amount of larkspur necessary to cause death varies with the age of the plant, the condition of the animal, and the individuality of the animal.

The larkspurs are most poisonous during early growth. During April, May, and June it takes much less of the plant to cause death than it does later when the plant is older. The tall larkspur is not poisonous after it has blossomed, and it may be reasonably safe to graze cattle on a range where this larkspur grows if the animals are turned on after most of the plants are through blooming. The seeds of the tall larkspur are its most poisonous part. However, cattle very seldom eat the seeds.

The small larkspur is poisonous through all of its growth; but immediately after blooming it dries up and disappears from the range, so that it is not dangerous after late spring.

Feeding experiments have shown that a steer must eat an amount of larkspur equal to from $2\frac{1}{2}\%$ to 3% of its body weight in order to be fatally poisoned. An animal weighing 800 pounds would have to eat approximately 25 pounds of either the tall or the small larkspur. Evidently the larkspurs are not violently poisonous, for to cause death a surprisingly large amount of the plant must be eaten.

Symptoms.

Sheep are never poisoned by larkspur and horses very rarely. Cattle poisoned by larkspur show the following symptoms:

On the range usually the falling of the animal is the first symptom which indicates that it has been feeding on the larkspur. However, most animals after going down the first time get up again and walk with the hind legs spread quite widely apart with a more or less staggering movement. There is little or no action in the joints of the legs, the walking movements being extremely stiff.

When the animal falls it goes down in a typical manner; usually the front legs give out first and the animal then supports itself from going clear over by resting the chin or the side of the head on the ground. In this position the hind legs are usually spread quite far apart. In severe cases the animal lies flat on the ground, raising the

head up and down; in less acute cases it will lie with the head erect. When standing there is a pronounced quivering or muscular trembling over the entire body, especially noticeable in the muscles around the nose and mouth. The spasmodic contractions of the muscles are also very clearly seen around the shoulders, hips, and flanks. There is frequently a belching of gas and an attempt on the part of the animal to vomit. There is usually considerable drooling or "slobbering." Constipation is almost invariably present.

Treatment.

A large percentage of the animals poisoned by larkspur on the range are already dead before they are discovered. Most of the animals which may be treated or cared for are the ones which are poisoned when being trailed from one range to another, or during the driving operations of a round-up.

After an animal goes down it should not be disturbed at all. If it has fallen on uneven ground the head should be placed higher than the body, to allow it to breath more easily. The rough-and-ready method of treating the animal by bleeding should be abandoned; for all experience on the range shows that bleeding only produces weakness and makes recovery less probable. If a steer tries to vomit we may usually safely conclude that it has eaten a fatal dose of larkspur and that nothing can be done to save it. However, the chances for recovery in most cases are good if the animal is allowed to remain just as quiet as possible and is given the following treatment, which was developed by Dr. C. Dwight Marsh, of the Bureau of Plant Industry, United States Department of Agriculture, who reports very satisfactory results from its use:

Physostigmin salicylate.....	1 gr.
Pilocarpin hydrochlorid.....	2 gr.
Strychnine sulphate	$\frac{1}{2}$ gr.

If losses are taking place each cowboy should be supplied with this remedy made up in tablet form. It can be secured from any druggist. The treatment is administered in the same way as though the animal were being vaccinated for blackleg. A four-dram hypodermic syringe should be provided for this operation. The tablet must be all dissolved and administered as a single dose. The dose should not be repeated. If possible, a bottle of boiled water in which to dissolve the tablets should be carried in the saddle bag. If it is not convenient to use boiled water, then use any clean clear water available. The essential thing is to get the tablet dissolved in clean water and injected under the skin of the animal.

Methods of Handling to Reduce Losses from Larkspur.

On many ranges the tall larkspur grows in small patches; it is these small patches that cause a high percentage of our losses. Where the larkspur is found growing on such well-defined areas, a practical method of preventing loss is by grubbing it out. The cost of grubbing will depend on: (1) The average wages of the men employed; (2) the cost of transporting men to the infested area; (3) the abundance of the plants and their distribution; (4) the nature of the soil, whether loamy, gravelly, or rocky; and (5) the type of vegetation the larkspur is associated with, whether weeds, creek brush, sidehill brush, quaking

On the most difficult areas the cost of grubbing should be \$15 per acre, and the average cost should be approximately \$10 per acre.

Where grubbing can be done, it is much cheaper in building or establishing drift fences because (1) there is no storage through nonuse; (2) the first cost of fencing is less than that of grubbing; (3) the yearly cost of fence repair is less; (4) the rebuilding of the old fence when it is worn out is avoided.

Grubbing should be done so thoroughly that no plants are left to reinfest the area worked. The larkspur should be grubbed at least 6 inches below the surface of the ground, and the more effective will be the work. Not only the main tap root but the well-developed side roots should be taken out of the ground. If left in the ground they will produce new growth. A second grubbing the next year will be necessary, but the expense will be less. Practically speaking all the plants will then have been removed from the range.

It is practical to first graze larkspur-infested areas before grubbing.

However, the sheep should be confined as closely as possible to larkspur patches because if they graze the rest of the range there will not be much feed left for cattle. The cattle will then graze whatever they can find and they will graze all the larkspur. The object of first grazing a larkspur-infested area is to remove the tempting larkspur plants and to give the remaining plants a chance to grow. Also, when the larkspur is very large it is set back severely and will not produce much growth that season. There is little or no use in trying to remove larkspur from a range by grazing with sheep, especially in the spring. If it is not done at this time, the larkspur will grow to such a height that the sheep will only remove the top leaves and the plant will still be tempting to cattle; and, when the lower leaves are stripped off by the sheep, the upper leaves and seeds will still be produced.

It is so much larkspur to kill an animal, the chance of loss will be greatly reduced if the larkspur patches are removed or grazed.

There should be plenty of salt where the cattle can get it. When larkspur is growing on the range, the salting should be placed where they will be away from the larkspur. This will help to keep the animals from bunching and feeding where the larkspur plant is abundant. The salting grounds should be changed, so that no part of the range will be badly infested. When the larkspurs have blossomed the infested areas may have a minimum chance of loss taking place.

Range plants are greatly influenced by the hunger of the animals. When the stomach is empty and the animals are very hungry they will eat many plants that they ordinarily would not eat. Among the first if there is much variety of forage present in small quantities the larkspur causes no real ill effects. When in large quantities by hungry cattle some of them will get enough to cause death. Therefore, it should be avoided to drive stock over larkspur country while they are hungry.

their stomachs are empty. At all times cattle should have the greatest possible chance to select the plants they like. This means that fast trailing and hazing from one range to another must be cut out if losses from poisonous plants are to be kept down.

Herdin Cattle Away from Larkspur Patches.

It is more or less impractical to herd cattle away during the entire grazing season from a larkspur range, but extreme care should be taken for the first two or three weeks that the animals are on the range; for during this period they are frequently in very poor condition, some even "skin poor." In this state they will eat any and all plants, including poisonous kinds, a good many of which they will not touch later, when they have mended or increased in flesh and their ravenous hunger has been satisfied. It should always be remembered that a poor, weak, hungry animal will eat many plants that it will not touch when well fed and in good condition.



Figure 4. Death Camas bulb, showing thin, papery, brown coats.



Figure 5. Death Camas, showing typical manner of growth on the range.

DEATH CAMAS
(*Zygadenus* Spp.)

Death camas is the name by which this plant is known in most places on the range, although it is sometimes called mystery grass, poison wild onion, poisonous sego, poison camas, and lobelia. Death camas, however, is the recognized common name and is the one which should be used.

There are several forms of death camas in Nevada; but they are all so nearly alike both in appearance and their effect upon range animals that one description of the general form of the death camas is considered sufficient.

ant.

is an erect plant producing from five to seven fully leaves. It grows from a layered bulb set from $2\frac{1}{2}$ in the soil. The bulb is from $\frac{1}{2}$ to $1\frac{1}{4}$ inches thick with thin papery brown coats as shown in Figure 4. From 6 to 18 inches long by a little less than $\frac{1}{2}$ inch wide-like in appearance with a projecting ridge like the one on the under side. They are much more succulent or fleshy than the common grass leaves. There is no well-defined leaves appearing to rise from near the surface of the soil. The flowers are greenish-yellow or whitish, about $\frac{1}{4}$ inch in diameter produced in a flower cluster from three to ten inches long. The flowers ripen first and produce seed on the lower part of the cluster in the latter part of May and the first part of June. The seed does not grow until the next spring, when they produce a grass-like plant which, however, has no bulb at first, but grows in the season. The second year this leafy grass-like plant produces typical death camas leaves and flower stock as shown in Figure 5.

habitat.

It is found on practically every stock range in Nevada. It is more common in the northern part of the State than in the southern areas upon which it grows are invariably moist, and the typical grazing types in which it grows are: (1) grass, (2) semimeadow areas, and (3) typical weed vegetation consists largely of showy flowering plants. It is found in the shade under standing timber. It is found on the mountain foothills, the high open mountain park and sagebrush country of northern and western Nevada. The death camas starts to grow in the spring varies with the soil with different exposures and different soils. It is found as early as the middle of March. The plant makes its growth in sandy soils and on southern exposures. On the northern soils its growth is much retarded, probably because of the cold and consequently they warm up less readily. If the soil is warm the death camas commences to grow from the seed a few weeks after the snow melts out in the spring and it is not likely to cause loss. On the lower ranges by the latter part of the season it has usually died down.

Mistaken for Death Camas.

It is most commonly confused with the wild onion. The flowers of the death camas, however, have no such smell as the flowers of the wild onion grow out from one side of the stem, as in Figure 6, while the flowers of the death camas grow from the sides of the stem, as shown in Figure 6.

Poisoned.

It is poisonous to all classes of stock, but more especially to horses. They seldom die as a result of eating it, though cattle and horses in the spring when they are turned out in very poor condition when they are being driven over badly infested areas. If they are usually extremely hungry and will nip at anything whether good or bad.

Losses of live stock from this plant are heaviest on a range that has been overgrazed. On such a range the death camas usually starts much earlier than the other plants because it has not been set back by the heavy grazing and consequently it has a greater amount of reserve food material with which to start plant growth. Further, the highly palatable and nutritious plants have all been removed, leaving only the undesirable and poisonous kinds. Consequently the probability of poisoning on such a range is greatly increased.

Parts of the Plant Which Are Poisonous.

All parts of the plant are poisonous. Ordinarily the part eaten is the leaves, which are equally as poisonous as the bulb. The seeds are



Figure 6. Death Camas on the left, and wild onion on the right.

also poisonous, but are very seldom eaten. The entire plant is poisonous throughout its period of growth.

Amount of Death Camas Necessary to Cause Death.

The amount of the death camas which must be eaten in order to cause fatal results depends upon (1) the individuality of the animal; (2) the weight of the animal, and (3) the condition of the stomach when the plant is eaten. A ravenously hungry animal is poisoned much more easily than one with a full or partly filled stomach. On the range a mature ewe weighing approximately 100 pounds must eat from $1\frac{1}{2}$ to 5 pounds of the plant to cause fatal poisoning. For lambs it takes a correspondingly less amount.

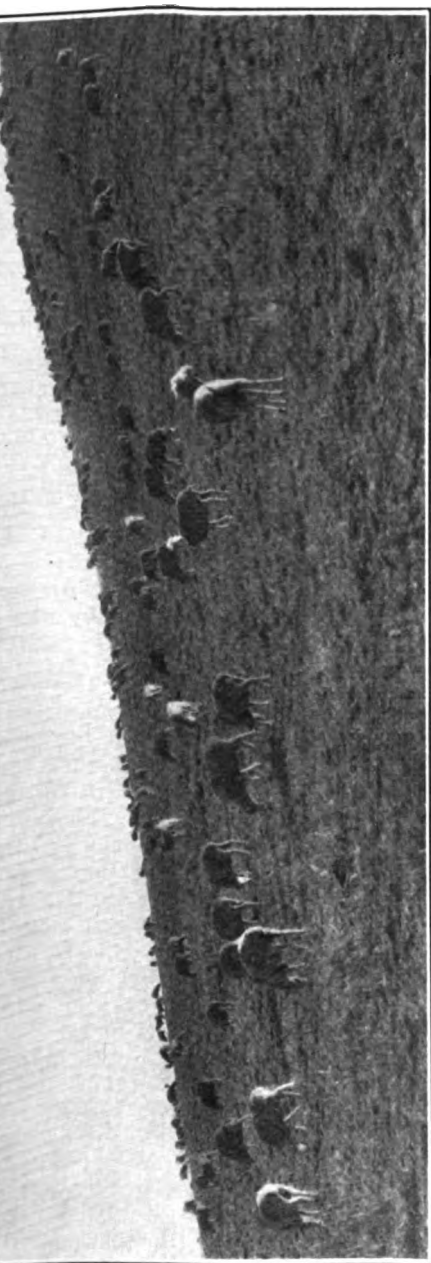


Figure 7. When sheep graze openly and quietly on the range they show great care in the selection of the forage they eat. Thus the losses from poisonous plants are kept down to a minimum.

Symptoms.

When sheep on the range are poisoned by death camas the symptom noted is that some of the sheep begin to straggle along with a decided indisposition not to graze with the other animals in the band. The head is dropped, and with most animals salivation or slobbering at the mouth takes place, accompanied by vomiting in the case of the badly poisoned, although many animals that have eaten a fatal dose do not salivate as freely as some which have eaten only sufficient to make them sick. The manner of walking is very irregular, both fore and hind legs being affected, more especially the hind legs. When the animal falls it goes down head first, oftentimes resting for a short period on its knees. After the animal is down and cannot get up, a majority of them go off into a state of profound insensibility resembling very deep sleep, from which they cannot be aroused, and in this condition they die.

On a range in eastern Nevada, where practically the only vegetation was sagebrush and death camas, five steers were poisoned by death camas, and the symptoms were practically the same as those just given for sheep. However, cattle are very seldom poisoned by eating death camas plant because (1) it is not highly palatable and (2) it does not usually occur in a sufficient abundance so that the animals will be able to eat only a fatal dose.

Remedies.

There are no recognized remedies at the present time. The only treatment known is to let the animals entirely alone, disturbing them just as little as possible.

Methods of Handling to Reduce Losses from Death Camas.

When grazing openly and quietly on a range, as in Figure 7, sheep show great care in the selection of the forage they eat. However, when they are being trailed from one place to another they are deprived of the privilege of selecting and choosing their forage, with the result that without this chance of selection they eat everything that is absolutely objectionable. If the death camas is on the range, and usually is, they may eat so much of it that they get more of the poison than they can cast off, and death is the result. It should always be remembered that when a sheep is hungry it usually eats the whole plant it is grazing on at once; but only the tender and juicy portions, such as the leaves and young stems, the most choice portions, are nipped off when it is not extremely hungry or when it is allowed to graze with an opportunity of selecting its forage.

Thus, in order to avoid losses on a range, where death camas is growing, sheep should be so handled that they are never at any time extremely hungry. If they are being trailed from one range to another, it is best to allow them to graze for an hour or two in the morning just as openly and quietly as possible before starting to trail them. This will allow all the animals to fill quite completely; they will then use greater care in the selection of their forage for the remainder of the day. This would not be the case if they were starved on the trail immediately after leaving the bed-ground.

Another very important point is to get the sheep off the bed-ground

ble in the morning. When a sheep beds down at all and contented. By morning it is beginning to and the longer it is kept on the bed-ground the it is then far more apt to be poisoned when it gets the death camas is growing.

death camas poisoning so far observed, the animals the forenoon. This is due to the fact that the ant decreases as the stomach becomes full. Thus m to be highly palatable and to be relished during frequently is not touched later in the day. This death camas. It is grazed chiefly during the early s seldom touched when the stomach begins to be s highly important that the sheep should be so early morning hours that they will have the the selection of their range forage; if possible, he morning they should be grazed on range free where it has only a scattering growth.

prevailing method of handling sheep, especially in ar, is to establish a main camp from which the y until all the feed in the immediate vicinity of ten out for a radius of two or three miles. This y trailing back and forth in order to get from y been grazed to fresh feed. Thus the sheep trail d each day until all the forage on the range d is completely eaten off. This method of han- in all plants being eaten, whether poisonous or palatable ones are first grazed, and as these plants palatable ones are left to be grazed including, of as. In order to avoid losses resulting from these handling sheep, they should be allowed to bed happen to be when night comes. They will then ed in the morning. The variety of forage from be much greater and the chance of poisoning will providing the animals are gotten off the bed-morning and are allowed to spread out to graze each ewe with her lamb. Close-bunched grazing, d massing should never be allowed, not only in es down, but also for the good of the ewe and her st full and effective use of the range forage.

been deprived of salt for a week or ten days it l or depraved appetite, with the result that it which ordinarily it would never touch. There- est importance that sheep be regularly and abun- the appetite will remain normal and the tendency isonous plants will be reduced. This means that every day, and if it is not practical to salt daily, d at least every three days. A sheep under ordi- s will eat approximately $\frac{1}{2}$ ounce of salt per day, to every hundred head. This does not make any which, of course, varies according to the manner istributed to the sheep.

LUPINES
(*Lupinus* Spp.)

The lupines in Nevada are known by various common names, being improperly called blue bean, wild bean, wild alfalfa, blue pea.

Description of the Plant.

The lupines belong to the pea family, and are erect plants from six inches to three feet high, depending upon the species, the altitude, the soil, and moisture conditions. Most of the species in Nevada grow year after year from the same heavy deep-set roots, which produce several stems, the leaves of which are long stemmed and are divided into from four to fifteen small leaf divisions, all spreading from the end of the one leaf stalk. The flowers are borne in long clusters and are shaped like those of a pea. The colors are various shades of blue,

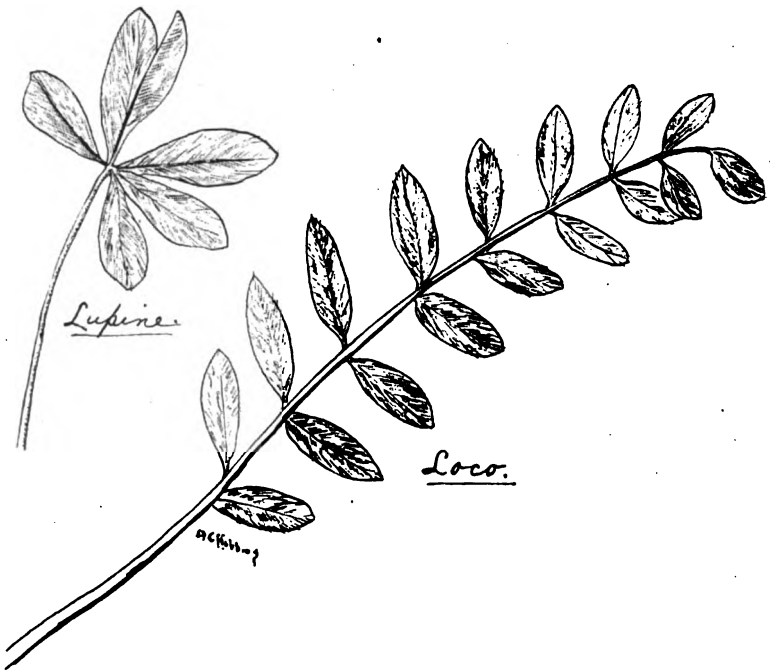


Figure 8. Showing the arrangement of the leaflets of the lupine on the left and a typical leaf of the loco on the right.

white, pink, or yellow. The pods contain one or more seeds and are usually covered by a growth of many small gray hairs. This hairy growth also is usually found on the upper surface of the leaves, giving the plant a typical grayish appearance. The lupine plant may be found in blossom from early summer until late fall. The largest number of flowers, however, are produced during July and August. A typical lupine plant is shown in Plate III.

Distribution and Habitat.

The lupine is one of the most widely and abundantly distributed of all the weeds or showy flowering plants found on the ranges of Nevada. It is found on practically all the low elevations and grows to an alti-

It grows on all types of soil, except those which are dry.

Known for Lupine.

It is frequently confused by many stockmen with several species of which is loco. However, the lupine may be distinguished by the arrangement of the leaflets, as shown in Figure 9. They all arise from the end of the stem, while in the case of loco the leaflets are arranged along the main axis of the stem, one leaflet borne at the end.

Seasoned.

Under these conditions this plant may be poisonous to all livestock. However, the heaviest losses take place when sheep graze on the seeds which have been formed within the pods. Horses do not eat lupine, but in order to be poisoned they must graze on it for a rather prolonged period; this seldom occurs. It is not grazed with any degree of eagerness by sheep. It has been reported on certain ranges in the late fall that it is the only one to be found on the range. Lupine is not eaten by horses and cattle under Nevada conditions.

Sheep graze upon the grasses and succulent weeds before the lupine comes in. However, in the fall of the year when the other feed is scarce and what little is left is dry, the lupine is usually eaten. Sheep then graze upon it with disastrous results.

Lupine becomes more palatable after it has been seasoned. By this time of the year most of the seeds have been eaten and of course there is then little or no danger under such range conditions before sheep are allowed to graze where lupine is common it should be carefully watched to see that it has no seeds in its pods. If there are still seeds in the pods the sheep should not be allowed to graze upon it as they will eat the seeds and the other plants on the range which will be eaten in the meantime.

There is a small weevil which feeds in the pods of lupine and destroys the seeds. The pods may look as though they are full but upon close examination they are found to be empty. The chances of poisoning taking place are very small.

Which Are Poisonous.

Under these range conditions which have not been definitely proven to be poisonous and the tops of the lupine plant have been found to be poisonous. However, the majority of the losses on the range occur after the lupine plant has blossomed and produced seed (see Figure 9.)

When a sheep has eaten a large amount of the pods and then chews its cud before the typical poisoning symptoms appear, after the symptoms do appear the animal usually recovers in a very short time or it may linger for one or more days before dying or getting entirely well. Thus, sheep may be seen one day and yet they may not be sick until the next day. They may be grazing on country entirely free from any lupine.

or all poisonous plants. This accounts for the fact that losses of are reported on a range entirely free from all recognized poison plants. A question that often bothers the range man is: How can a band of sheep graze and fill up on lupines at one time with no effects; yet at another time when they do the same thing heavy losses follow? This may be explained by the fact that the poison from lupine is excreted by the kidneys and is thrown off as soon as it is liberated; in order to cause death or ill effects the animal must



Figure 9. A lupine plant in full pod. When the plant is in this stage most of the losses from poisoning take place.

more of the poison at one time than it can cast off immediately, the result that the excess of poison is left in the system, causing typical lupine symptoms and possibly death.

Amount of the Plant Necessary to Cause Death.

The amount of the plant that must be eaten before death will place is an extremely variable quantity due to (1) the individuality of the animal; (2) the weight and general health of the animal; (3)

the lupines are associated with; (4) the condition of the animal when the lupine is eaten; and (5) the feeding tests so far made show that it takes from one and one-half to two pounds of the seed to cause active acute poisoning or weighing approximately 100 pounds, and about 1½ pounds of seeds to produce the same serious effects. Many animals poisoned by eating the leaves and stems, and from this source have been reported.

The most common symptom of lupine poisoning is the animal breathes. In acute cases of poisoning the animal has difficulty and there is usually a frothing at the mouth. During periods of difficult breathing it will throw itself on its back with great mental excitement, often running in no



10. Sheep in first stages of lupine poisoning.

jumping into other animals in the flock or against any object that may happen to be in its way, such as brush, trees, or fences. When the roof of the mouth is examined a typical frothing is usually seen. A large number of animals die during the period of extremely difficult breathing which make the animal appear as though it were in violent convulsions. On the other hand, the animals may go into a very deep sleep from which they are not wakened. In less acute cases of poisoning the breathing is not so difficult and the animal may stand or lie down in a comparatively normal position. The drooping of the ears is another typical symptom accompanied by the animal pushing or butting its head against near-by animals or objects. After an animal has been through one of these periods of extremely difficult and labored breathing it stands trembling all over. Figures 10, 11, 12, 13

show the characteristic attitudes assumed by a sheep poisoned by lupine.

Treatment.

There are no remedies which have given satisfactory results in treating a large number of sheep poisoned at the same time, usually the case on the range.

Methods of Handling to Reduce Losses from Lupine Poisoning.

Practically speaking, almost all the heavy losses which take place on the range as a result of sheep eating the lupines are due to mismanagement.



Figure 11. Sheep in second stage of lupine poisoning.



Figure 12. Sheep in third stage of lupine poisoning, in which they usually die.

ment of the animals and to a lack of information regarding conditions under which poisoning almost invariably takes place.

When sheep have been driven hard or shipped or penned together very hungry. If they are then turned on to a lupine range where the plants are in flower and pods, they will eat the lupine plant as rapidly as possible, especially the pods and seeds, consuming enough of the plant to cause death. Therefore, a rule which should never be violated is, never to turn ravenously hungry sheep on any lupine range, for losses will be almost certain to follow. The most disastrous range losses have taken place where this rule was not observed.

During late summer and early fall the lupines grow abundant

ranges. At this time of the year they usually are and quite frequently the leaves are green and offer forage because the other range plants are dry or dead. It should be remembered that the seeds are by no means a poisonous part of the plant and at this time of the year the seeds are full of the pods, for they have a pleasant sweet taste and are particularly relished. Therefore, a lupine range in a dangerous grazing country, especially if the lupines are the only plants on the range.

If necessary to drive sheep for any considerable distance away from lupines it is always highly important, in order to get them down, to first allow them to graze with the greatest freedom during the early morning hours. Then, instead of



poisoned by lupine. Frequently when poisoned they lose their sense of direction, butting into bushes, trees, and other

When trailing them fast, they should be allowed to spread out as far as possible and to take their time in crossing over the range.

WATER HEMLOCK

(*Cicuta* Spp.)

Common names by which this plant is known in Nevada are poison hemlock, and poison parsnip.

Plant.

It is a marsh or water-loving plant, tall and branching, with a hollow stem. The smooth, hollow, green stems grow from

a bunch of fleshy, spindle-shaped roots (Figure 14) which have a series of cross-partitions dividing the interior of the root into small, short chambers, as shown in Plate IV which is a typical water-hemlock plant. The leaves are doubly divided, and each leaflet is narrow, long, and finely toothed along the margin. The flowers are borne in dense clusters at the end of the branches and are greenish-white in color.

Plants Commonly Mistaken for Water Hemlock.

The water hemlock is often confused with certain harmless plants which resemble it closely, not only in the appearance of the upper part of the plant, but also in the root structure. When the root of the water hemlock is cut in two lengthwise, it is easy to see the cross-partitions and small chambers. However, there are a few other plants in Nevada which have the same structure in the roots, notably the sweet anise (*Washingtonia*) and the water parsnip (*Sium*).

Sweet anise does not grow in extremely wet places as does the water

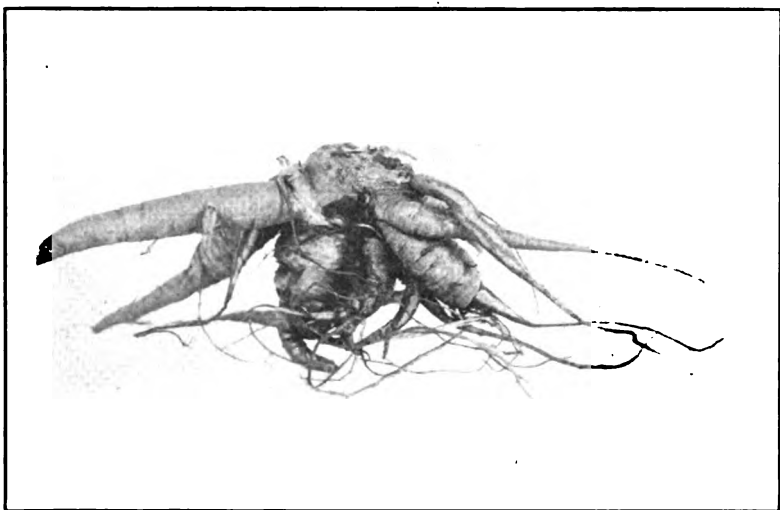


Figure 14. Roots of water hemlock, showing the fleshy, spindle-shaped manner of growth.

hemlock; it is found along mountain creek bottoms and in densely shaded places. The anise leaflets are much broader than those of water hemlock and it blooms during the early summer, while the water hemlock does not blossom until midsummer. Sweet anise is not poisonous to stock and is greatly relished.

The water parsnip grows in wet, marshy places, as does the water hemlock. However, it may be easily distinguished from the water hemlock because the leaves of the water parsnip do not branch, while those of the water hemlock are compound or branching, as is shown in Figure 15.

Distribution and Habitat.

The water hemlock is a typical water-loving plant and as such it is found along the banks of irrigation ditches, streams, in tule swamps, and wild meadow hay land. It has not a wide nor an abundant distri-

grows it causes considerable losses each year. It
ing away from extremely moist or wet areas.

isoned.

ntly poisonous to all classes of stock. In Nevada
horses are poisoned by water hemlock, but there
attle every year.

re Poisonous.

eeding experiments indicate that the only part of
re the roots. The leaves and stems in large quanti-
o sheep and cattle with impunity. It is the most
h we have on our western ranges, although it does
sses as some of the other poisonous plants, due to
ution and the more or less limited possibility of
p and eating the root.

ause Death.

ry small quantity of the root to cause death. Most
orted were caused with two to three ounces in the



typical water parsnip leaf on the left, and a water
hemlock leaf on the right.

ht to twelve ounces with mature cattle. It is there-
t the roots contain a violent poison.

to 40 minutes for the poison to be absorbed after
eaten so as to cause the first symptoms, which are
th and pronounced uneasiness with extreme pain,
odominal region. After falling there is convulsive
rs and gnashing of the teeth, together with violent
anied by a gradual stiffening of the legs with a
f the head and neck. Quite frequently during the
nvulsions the animal will bellow and groan from
the eyes are dilated and the pulse rapid and weak.

The convulsions are intermittent, some prolonged, others of short duration.

The intervals between the muscular spasms or convulsions grow shorter until the animal becomes unconscious and finally dies.

The poison is absorbed and acts very rapidly, and apparently is cast off quite quickly, for the animal fatally poisoned soon dies, while those

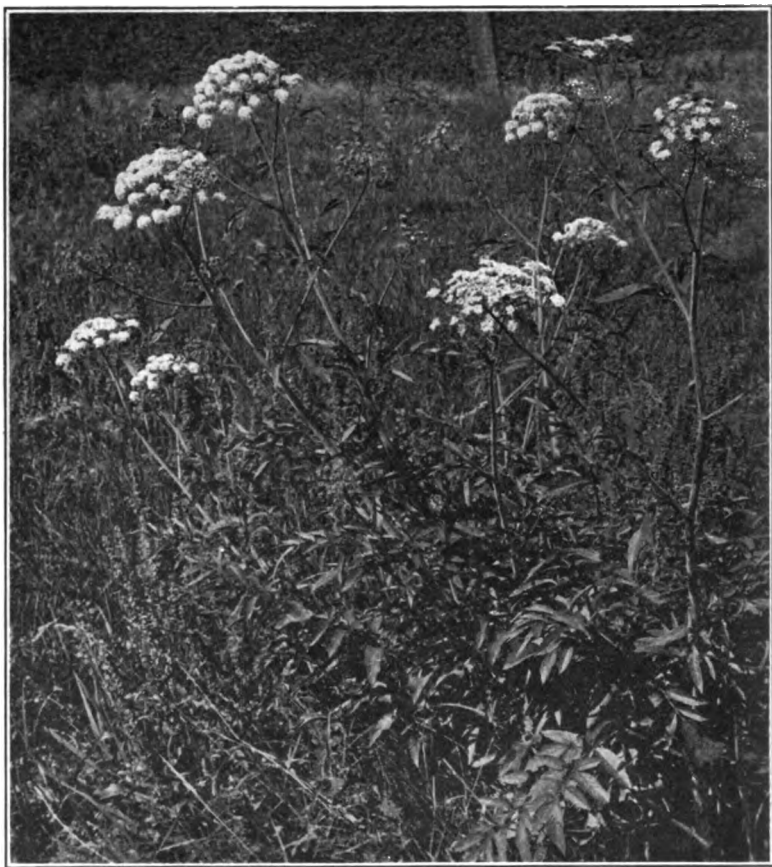


Figure 16. A water hemlock plant showing its typical manner of growth with other vegetation.

which have not eaten a fatal dose soon recover and are, to all outward appearances, well.

Treatment.

At the present time the treatment for water-hemlock poisoning is very unsatisfactory because (1) when an animal eats a fatal dose the poisonous substance contained in the plant is so rapid in its action that death usually results before the animal is found or any treatment can be given; (2) there is no known specific antidote for the poison; and (3) the animal is so excitable when poisoned that to try to give it any treatment in many cases only makes it worse.

Methods of Handling to Reduce Losses from Water Hemlock.

The water hemlock has such a limited distribution and abundance that it is easily exterminated on ranges where it causes loss, by simply grubbing it out. The cost of one poisoned steer would usually pay for grubbing out all the water hemlock on several acres because of the ease with which it is grubbed and its limited distribution and abundance. (See Figure 16.) After the plant has been grubbed it should not be left on the range or in the field, but it should be put in a wagon and carried off to some inclosure where stock cannot get at it and where it should finally be burned. In case the grubbing was done on the range the most feasible way to dispose of the plant is to dig a hole and throw in the roots. A fire of dry sticks is then built on the roots and when the fire has burned down the hole is filled. Great care should be taken not to leave any of the grubbed roots on the surface of the ground where stock may eat them.

WESTERN GOLDENROD

(*Solidago* Spp.)

The two species which are definitely known to cause loss are found growing in the wild hay lands, in permanent pastures, and well-drained moist mountain country. They are known botanically as *S. spectabilis* and *S. concinna*.

Description of the Plant.

Under certain range conditions the smaller goldenrods seem to be poisonous. A general description of the small goldenrods should therefore be of greater value than a detailed description of any one kind.

The goldenrods which are known to have poisoned sheep are a foot or more high with undivided leaves. The leaves which are close to the ground taper toward the stem; the leaves on the stem are narrow, two to four times as long as broad, and more or less rounded in outline. The leaves produced close to or with the flowers are small, narrow, and flat. The flowers are yellow; they grow in rather dense clusters at the end of the branch stem. Plate V shows the typical form and appearance of the goldenrod which has poisoned many sheep in Nevada.

Where the Goldenrods Grow.

The goldenrods, especially the low-growing varieties, are found all over the northern half of Nevada. They grow in native hay lands, in well-drained pastures, and in the mountain park and meadow country. They do not grow in very dry country with sagebrush, dry grass, and weeds. While they have a wide distribution, they are rarely found growing in any great abundance over a large tract of meadow or pasture lands.

Animals Which Are Poisoned.

So far in Nevada the only animals poisoned by goldenrod have been sheep, among which there have been several disastrous cases of poisoning. Sheep grazing on goldenrod have been poisoned; others died from eating the dry plants in hay.

Parts of the Plant Which are Poisonous.

Only the upper part of the goldenrod is eaten, more especially the

leaves, the flowers, and the younger and more tender stems. roots of the plant are not pulled up when it is being grazed.

Amount of Goldenrod Necessary to Cause Death.

We do not know just how much goldenrod a sheep must eat before being poisoned. However, animals have died from eating $1\frac{1}{10}$ pounds of the green plant. Since some sheep have died from eating dry goldenrod in hay and others from pasturing it where there was an abundance of other plants, it seems that only a small amount is necessary to cause serious poisoning or death.

Symptoms.

The first symptoms noted are a salivation or slobbering accompanied by a constant movement of the jaws and lips. There is also continuous quivering of the ears and head, with recurring unnatural contractions of the body muscles. When these contractions take place they appear as if the animal were trying to shake something off its fleece. There is a pronounced arching of the back during these prolonged shaking spells. The legs are usually close together, appearing as though they were tucked up under the body. Any sudden noise immediately start a shaking of the fleece as above described. The various movements or muscular contractions start in the region of the face and head, pass down the neck and back, and finally affect the legs. After being poisoned, many animals, without any cause, leave the flock, start off in a dazed condition, stepping high with their front legs, with the head held high and quivering. This erect quivering position is held for a minute or more, when a trembling of the muscles of the neck, legs, and back will commence, with a sudden weakness and unsteadiness of gait, when the animal usually falls and passes into a convulsive state. During and immediately after this condition of the animal the pupils are dilated and the sense of direction and distance is completely deranged. As soon as the convulsive motions have ceased there is a champing of the jaws, with salivation, continued shaking of the head, and a quivering movement in the neck. Practically speaking, all animals poisoned seem to have an uncontrollable desire to seize some near-by object, such as a stick or a stone, and to chew it continuously for hours.

Methods of Handling to Reduce Losses from Goldenrod.

Large losses have taken place from feeding goldenrod to sheep on cured hay. If the hay is to be fed to sheep, the areas upon which goldenrod is found growing should be determined and the hay from these areas stacked by itself and fed to either horses or cattle, which seem to be immune from the poisonous effects of the plant. Usually the loss which occurs as a result of sheep eating goldenrod put up in cured hay is relatively small at any one time, only a few of the animals dying each day. When such losses begin the hay should be examined immediately, and, if found to contain goldenrod, the feeding of it to sheep should be discontinued. Under certain conditions, not yet completely understood, it seems that hay containing goldenrod may be fed to sheep without any losses taking place. Possibly this is due to the fact that there is such a small amount of the goldenrod scattered through the hay that none of the animals get a sufficient amount of it at any one feeding to cause trouble.

re pastured where the goldenrod is growing, they
 d at all times the greatest possible freedom in the
 forage. In order to keep their appetites normal,
 regularly and abundantly salted. Quite frequently the
 in dense patches from which it is entirely practical
 ls away. In order to do this the herder must be able
 plant easily and to distinguish it from all others.
 ellent illustration of the general growth and appear-
 . When it is cured in the hay the yellow blossoms
 e on the plant, so it is fairly easy to find the golden-
 ay is suspected of causing losses.



bit brush, showing its manner of growth on the range.

RABBIT BRUSH

(*Tetradymia glabrata*)

ow known to be poisonous at certain times of the year
 n range conditions. It has already caused the loss
 d head of sheep.

lant.

ub from one to four feet high with slender spreading
 re whitened with matted woolly hairs, which fall off
 leaves are smooth and green, the main ones being
 ing from a broadened and thickish base to a sharp
 young leaves are fleshy and pointless. The flowers
 e borne in clusters. Plate VI shows a typical branch
 d Figure 17 shows the manner of its growth and

it brush is very frequently found growing with the
 e described. It is also a shrub from three to four

feet tall with the branches widely set apart and covered with a dense mat of white hairs. Straight or recurved sharp-pointed spines produced instead of the primary or main leaves of the ordinary rabbit brush.

Distribution and Habitat.

The rabbit brush has a very wide distribution, being found more or less on all of our dry sagebrush areas. It is in evidence on our ranges throughout the year. The characteristic vegetation with which it is found growing is sagebrush, bud sage, white sage (*Eurotia*), salt scale (*Atriplex confertifolia*), salt sage (*Atriplex Nuttallii*), and green sages (*Chrysothamnus* Spp.). It is also found growing frequently in pure stands. It has not been found growing on land of alkali where the sagebrush is replaced by such shrubs as greasewood (*Sarcobatus* Spp.), and a few of the salt sages, sedges, rushes. It is never found growing in mountain areas where there is a great profusion of grasses and weeds.

Animals Which Are Poisoned.

Under ordinary range conditions this shrub is very seldom eaten by any class of stock except sheep, and they graze upon it only when forced to do so because of a distinct lack of more desirable food. Therefore the only animals so far known to be poisoned by it are sheep.

Parts of the Plant Which Are Poisonous.

During the spring of the year this shrub produces many young leaves and leaves on which the sheep graze, and consequently it is this part of the plant which has so far been responsible for all the losses. In fact the remainder of the plant is so very woody and tough that it would not be eaten by any class of range stock.

Amount of Rabbit Brush Necessary to Cause Death.

From all observations made so far, before being fatally poisoned a sheep has to graze exclusively on this plant for some time, until its stomach is nearly full. The fresh young leaves and buds with their tender green shoots are the portions eaten, but this occurs only when the sheep are very hungry; for these parts are not highly tempting or pleasing to the taste.

The fresh young leaves and buds contain about 2% of potassium cyanide, a violent poison, which may be the cause of the death of the sheep. Some sheep can eat far more rabbit brush than others without being poisoned.

Most of the losses which have occurred in Nevada were in flocks which were ravenously hungry or in flocks which had been fed during winter in feed lots and were being trailed over a range where rabbit brush grows. Sheep which have wintered down on the desert where the white sage and the bud sage grow abundantly seem able to eat rabbit brush without being injured. This is probably due to the fact that these sheep have been feeding all winter on plants containing a high per cent of potash or whatever the poisonous substance may be which is responsible for rabbit-brush poisoning.

Symptoms.

After a sheep has filled up on the young green shoots the animal first appears to be very dull and somewhat senseless. It staggers

grazing or standing still it may suddenly fall over in position, with the head bent or moved to the side of the spasms follow, the eyes are bulged and staring, the breathing is shallow. When breathing, the nose and face are though the nose were blocked with some obstruction. Death is fairly common in all animals down, and after death takes place. Swelling of the ears and head occurs in animals streaked with blood usually flows from the nose. After death falls, death usually follows in from five minutes to

has been poisoned by rabbit brush, little or nothing is left. Usually when a flock is poisoned by eating this brush, death takes place, and, as there may be several hundred animals at the same time, individual treatment is out of the

How to Reduce Losses to a Minimum.

Losses are almost entirely avoided by cautious herding. The most important thing to know is that the sheep are most likely to eat



Sheep grazing on an area supporting rabbit brush. Under these conditions poisoning is likely to occur.

When sheep are exceedingly hungry or when there is a shortage of range forage. (See Figure 18.) The herder should be familiar with the appearance of rabbit brush, and when the animals are feeding almost exclusively on the brush, he should, if possible, remove them immediately to a safe place. He should be able to recognize this poisonous brush and should drive the sheep where it does not grow. This is particularly desirable when the sheep are on the range-places along the railroads, at shearing corrals, or when shipped long distances and are extremely hungry.

When in this condition they eat everything that is not positively objectionable, and as a result, if the rabbit brush is present, they eat enough of it to cause death. Ordinarily they do not eat enough to do them any harm.

Often, when sheep are moved from the winter feeding-ground to their spring and summer ranges, flock after flock will be driven over the same driveways, along roads or narrow lanes. These driveways are usually overgrazed and at their best contain but little good food. The first flocks going over eat out all the most palatable plants, leaving only the less desirable ones. The flocks that follow are forced to eat such plants and shrubs as death camas and rabbit brush, with disastrous results. Therefore, in moving sheep from one range to another, it is best not to allow one flock to follow another if the rabbit brush is the only feed left.

When sheep have been shipped long distances they are exceedingly hungry. Before starting to graze them on a strange range or a range known to be infested with any poisonous plants, it is always much cheaper to fill them up on hay before moving them from the railroad point. Usually around loading corrals and shearing pens the range is overgrazed, a condition which favors the greatest loss from poisonous plants, especially rabbit brush.

LOCO

(*Aragallus* Spp. and *Astragalus* Spp.)

The almost universal name by which these plants are known on the western ranges is "Loco," from the Spanish word meaning crazy. They are therefore sometimes called crazy weed, from their effect on all classes of range animals.

Description of the Plant.

There are many different species of loco in Nevada, none of which cause serious losses. The locos belong to the pea family and have typical pea-blossom flowers borne in a crowded arrangement to the end of the flower stem. The flowers are of various shades of purple, yellow, white, or red. From them a pea-like pod is formed, often inflated or bladder-like in appearance, containing from two to many small seeds. The leaves have a very peculiar and characteristic appearance by which the plant may be readily distinguished on the range. They are made up of many small leaflets attached on one side of one leaf stem with an odd leaf always formed at the end, as shown in Figure 19.

Distribution and Habitat.

The locos are very widely distributed all over Nevada, being found on practically all grazing types such as the weed areas, sagebrush, open park, sand grass, white sage, and semidesert ranges. They are found at all elevations.

Animals Which Are Poisoned.

All classes of range animals are affected by these plants. However, sheep and horses are more likely to become locoed than cattle.

There is only a small number of locoed animals in Nevada.

in the extreme southern part of the State, where sheep, and horses are ranged on account of the lack of

ways in which the loco plant may affect range animal, killing them within a few days, and (2) where the animals live for a considerable length of months to a year or more, during which time they show symptoms as in the acute form, only to a milder degree.



Loco plant, showing manner of growth and arrangement of leaflets on axis of leaf.

A characteristic symptom of the locoed animal is the loss of control when walking, the gait being like that of a drunken animal. The animal's sight is impaired, and it cannot judge the distance of objects accurately. In serious cases total blindness and the sense of hearing is frequently affected, often to such an extent that the animal is unable to determine the direction from which danger comes. In cattle and horses the head is usually shaggy and the coat becomes very rough, and the gait staggering

and slow. Frequently with sheep a general shedding of the wool takes place or it is shed only in patches. The back is quite frequently extremely arched, and there is trembling, especially of the legs and knees. It is almost impossible to keep a bunch of locoed sheep from

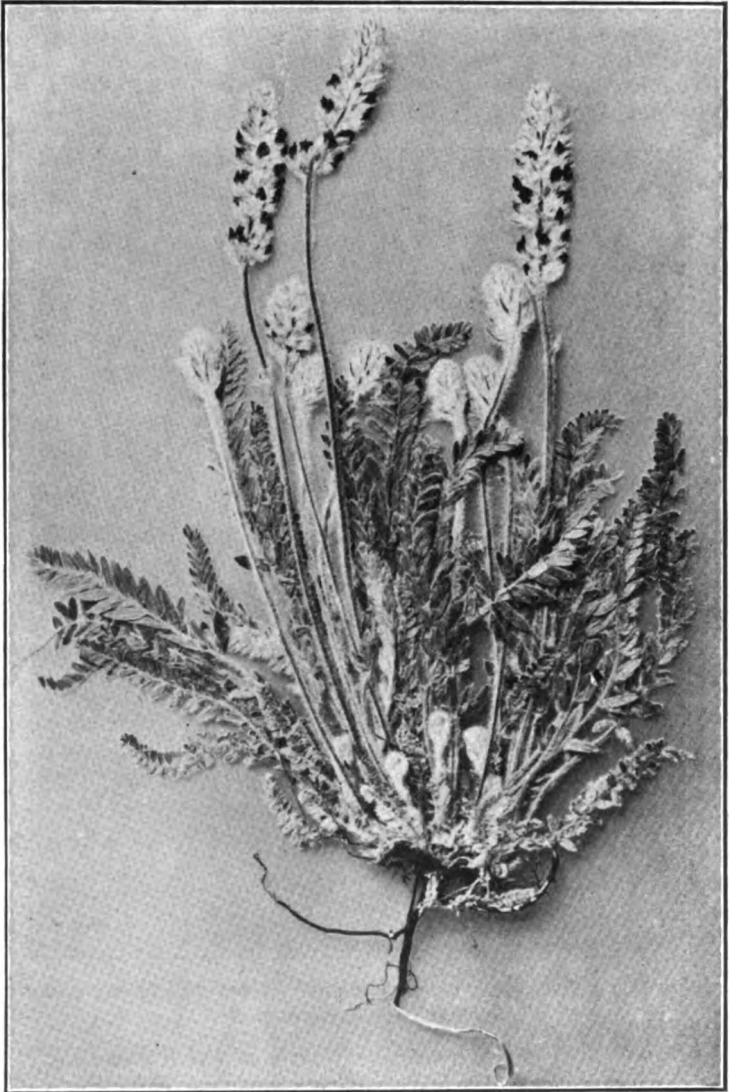


Figure 20. A loco plant, showing the hairy growth all over the plant. All locos producing this hairy growth may be looked upon with suspicion.

straying or to drive them in any definite direction. With many animals the sight becomes so badly affected that they cannot keep up with the flock, and they are often found dead in deep ravines, or drowned in

streams or water holes. As a result of feeding almost exclusively on loco the animal finally dies of exhaustion and starvation. In the later stages the locoed horse becomes very poor, his eyes are sunken, and he usually is abandoned by both man and beast, and will stand for days and even weeks upon a very small area of ground without water and with very little food until death from starvation relieves him.

Methods of Handling to Reduce Losses from Loco.

The loco weeds capable of causing the typical symptoms are highly unpalatable and are very rarely touched by any animal except those which are extremely hungry or which are grazing on a range where there is a distinct lack of more desirable plants. This is the case on all overgrazed ranges or where, due to climatic conditions, the loco weed is the predominating plant. Under these conditions the animals are forced to eat the loco. After having once developed an appetite for it however, they graze it in preference to all other range plants. When stock are grazing upon an area infested with loco a very close watch should be kept, and as soon as any of them commence to show signs of being locoed they should be immediately separated from the rest and placed in an inclosure and fattened. If this is not possible, they should be taken to a range free from loco.

If the animal has become rather poor, as is always the case after it has been eating the plant for some time, it should be given a very nutritious ration and for a few days 4 ounces of magnesium sulphate should be dissolved in the drinking water. In case of horses which are extremely nervous Fowler's solution should be given for from two weeks to a month in daily doses of 4 drams either in the drinking water or the grain.

Animals develop the loco habit primarily as a result of a lack of palatable nutritious range forage. After an animal has once acquired the taste for loco it must never again be turned on a range where the loco is found growing. In order to reduce the chances of sheep developing a taste for the plant, they should be grazed in open formation, which will allow natural freedom in the selection of their forage and they should be allowed to bed down wherever they are on the range at night. (See Figure 21.) When sheep are bedded for several nights on the same bed-ground they first graze out all of the most desirable plants, and such weeds as the locos are left until the last. If the use of the same bed-ground is continued after all the valuable plants have been removed, then these animals will be forced to eat the loco with a very good chance of developing the loco appetite. Further, when a sheep is hungry it is not particular about what it eats. Therefore, all flocks should be allowed to leave the bed-ground just as early as possible in the morning, for the longer they are kept from grazing the more hungry they become and the chances for their grazing the loco correspondingly increase. Ewes with lambs should at all times be allowed to graze openly and quietly because lambs are more likely to develop the loco habit than are the old ewes. If the lambs are separated for any length of time from their mothers, due to close herding, running and massing, they become very hungry with the increased possibility that while in this hungry condition they will eat the loco weed. Salt should always be supplied, so that the animals will not develop a perverted taste.

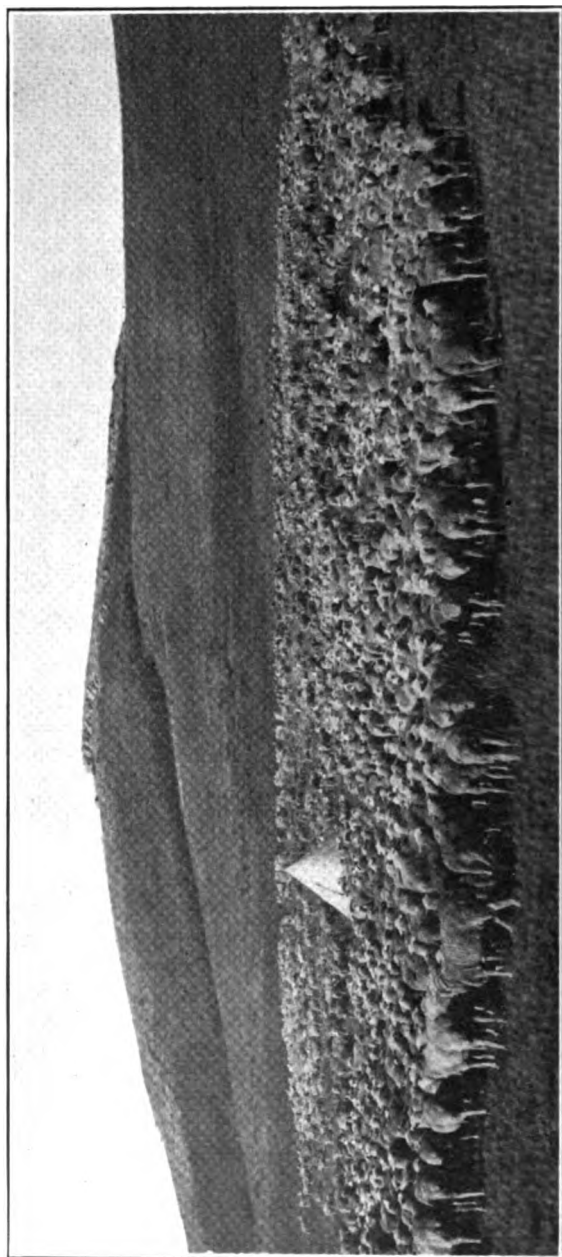


Figure 21. Sheep ready to bed down at evening on a new bed-ground. If the bed-ground is changed daily sheep are less liable to graze poisonous plants with fatal results.

to keep the number of locoed animals down to a
ould be grazed openly, with little running or massing
ould be permitted if possible to choose their own bed-
e supplied with a regular and liberal amount of salt.
raze during the early morning and evening hours, on
e is an abundance and variety of good forage plants.



False hellebore, showing the manner of its growth and the
shape of its leaves and flowers.

FALSE HELLEBORE

(*Veratrum* Spp.)

Names by which this plant is known on the range are
Indian corn, Indian poke, poke root, bear corn, and

Description of the Plant.

A tall plant, growing from two to six feet high; thick, short stocks; leaves broad, clasping, prominently veined and plaited. Stems and flowers are covered with a fine growth of hairs; the leaves are a greenish-yellow or greenish-white in color.

Distribution and Habitat.

This plant is not widely nor abundantly distributed in Nevada. However, it is found quite frequently in certain mountainous regions where the soil is of a rich loamy nature and is supplied with a large amount of water. Thus it is found in swampy places, along streams, and in wet meadows. Figure 22 shows the manner of its growth and the shape of its leaves and flowers.

Animals Which Are Poisoned.

In Nevada the only animals known to be poisoned by eating false hellebore are sheep. Cattle have been observed to eat the leaves with no ill effects after they have been frosted and turned reddish in the fall of the year.

Many lambs have been poisoned because they ate the large leaves and crowns just as they were commencing to grow in the spring. Many cases of poisoning have been observed on closely grazed ranges where the sheep filled up on the false hellebore almost exclusively, after which practically all the sheep in the flock became sick and several died.

Symptoms.

The first symptoms noted are extreme salivation accompanied by vomiting or attempts to vomit. With many animals there is pronounced muscular weakness, muscular tremors, spasms, and paralysis. The breathing in all animals which are too weak to stand is shallow, the temperature is materially reduced, the pulse is cold, the sight impaired, and death results from what may be termed suffocation.

Methods of Handling to Reduce Losses from False Hellebore.

With the exception of lambs but very few sheep are fatally poisoned from eating the false hellebore. However, each season many sheep are made violently sick because they fill up exclusively on this plant. When it is eaten in moderate amounts it causes no ill effects. When animals are allowed to fill completely on it, then poisoning results. In order to avoid this, care should be taken to allow animals to eat it only moderately or else not at all.

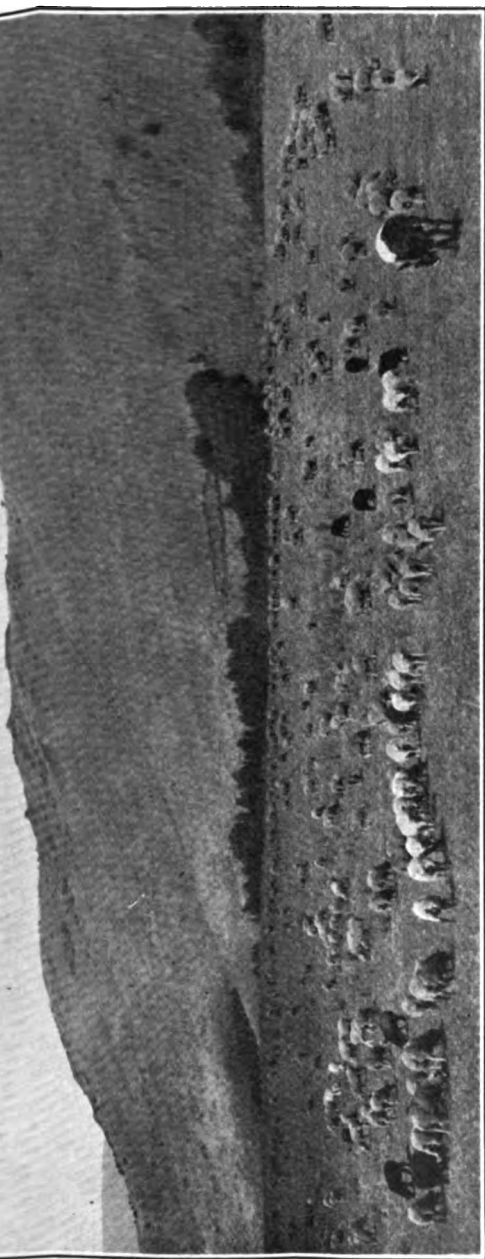


Figure 23. To reduce losses from poisonous plants sheep should be allowed to graze openly and quietly, to give them the greatest possible chance to select their range feed.

ACKNOWLEDGMENT

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VENENOSAS A OVEJAS Y A GANADO EN LOS RANCHOS DE NEVADA

ABALLERO O CONSÓLIDA REAL. (LARKSPUR.)

Consólida real crecen en los ranchos de Nevada. Se llama real alta y consólida real pequeña, nombres por la altura de la planta.

Las altas son plantas erguidas y ramificadas de dos pies, las raíces son grandes, hondas y bastante leñosas, de donde se generan los tallos. La forma de la hoja es ovada, las flores son de varios tintes de azul o púrpura y la estructura es puntiaguda del modo que se indica en figura 2.

La pequeña genera generalmente un solo tallo de 9 pulgadas de altura. Esta planta está indicada en placa I.

Comunmente tomadas por consólida real.

Comunmente tomadas por consólida real son el colorado de rosa (wild pink geranium) y el acónito.

Las hojas del geranio silvestre se asemejan mucho a las de la consólida real, causa de los dos pequeños y puntiagudos apéndices de la hoja, 2 que no se encuentran en el pecíolo de la consólida real, se apreta la hoja del geranio el aroma característico resulta. La hoja de la consólida real no tiene este aroma, el geranio está generalmente cubierta de un crecimiento fino y pardusco, mientras que las hojas de la consólida real son cubiertas de una copa blanca de superficie borrosa, de ciruelas y de uvas.

La diferencia entre la consólida real en que las hojas de la consólida real son mucho más numerosas y casi no tienen aroma, en vez de ser puntiagudas como las de la consólida real, son cubiertas de una caperuceta como se ve en figura 2. Esto le da el nombre común de "monkshood."

En qué regiones y donde crece la consólida real.

Se encuentra en casi cada rancho de la mitad sur de Nevada. Crece en lugares bien desaguados, húmedos y al borde de los lechos de riachuelos; en los campos de alfalfa; y sombreado en parte por grupos de alisos.

La pequeña crece en suelos bien desaguados pero no en lugares húmedos y generalmente a plena luz del sol. Así, los ranchos de artemisia fronterizos son los lugares donde la consólida real pequeña más abunda.

En qué partes se envenenan por consólida real.

Comunes de los ranchos sólo el ganado se envenena por la consólida real.

Partes venenosas de la planta.

Las partes venenosas de la consólida real alta que son la causa de la mayor parte

de las pérdidas son bien arraigadas, y cuando los animales apacentan, es casi una imposibilidad física que las raíces se desarraigan con la planta. Por consiguiente, se comen sólo las partes superiores y verdes.

Pruebas de alimentación indican que el veneno no se encuentra en las raíces pero en la parte superior de la planta. Las semillas florecen en la parte más venenosa, después las hojas, y ultimamente los tallos. Después de que la planta ha florecido el veneno desaparece de los tallos y de las hojas y se concentra en las semillas. De eso resulta que el ganado puede comer las hojas y los tallos de la consólida real después de que ha florecido y producido las semillas.

Cantidad de consólida real precisa para matar.

La consólida real es más venenosa durante su desarrollo temprano de Abril, Mayo y Junio. En cuanto que envejece se vuelve menos venenosa y para matar necesita mucho más de la planta que durante el primer período de desarrollo. Después de que la consólida real ha florecido, pierde su calidad venenosa y el ganado puede comerla sin gran peligro de hacerse daño. Pruebas de alimentación demuestran que necesita de consólida real $2\frac{1}{2}$ a 3 por ciento del peso del animal para matarlo.

Síntomas de envenenamiento por consólida real.

En los terrenos de pasto la caída del animal es el primer síntoma que se observa y si el envenenamiento ha sido grave el animal no puede ponerse en pie otra vez y muere. Pero, la mayor parte de los animales después de caer por primera vez, se ponen en pie y andan con las piernas traseras muy apartadas. Tambalean más o menos y hacen poco o no movimiento en las articulaciones de las piernas. Cuando el animal, lo hace de una manera típica; en general las piernas delanteras se aflojan primeramente, entonces el animal se sostiene en que se agarra la barba o el lado de la cabeza en el suelo. En los casos muy graves el animal se reposa tendido en el suelo y alza la cabeza de cuando en cuando, mientras que en los casos menos graves sostiene la cabeza erguida. Cuando está de pie se verifica un temblor por todo el cuerpo del animal, especialmente alrededor de la nariz y de la boca. Las contracciones de los músculos se nota también alrededor de los hocos de las caderas y de los costados. Con frecuencia hay un eructo y un esfuerzo por el animal para vomitar. Hay un babeo o baba considerable. Casi invariablemente hay constipación.

Método curativo.

Después de que el animal ha caído no debe ser perturbado a menos que no yace en suelo barrancoso. En este caso hay que poner la cabeza más alto que el cuerpo para dejar respirar más fácilmente al animal. El método de tratamiento común de sangrar el animal no debe ser empleado. Si el animal intenta de vomitar se puede concluir que ha tomado una dosis fatal y no se puede hacer nada para salvarlo. Normalmente hay buena esperanza de recuperación si se deja al animal tan quieto que posible y se le da el tratamiento siguiente

"Physostigmin salicylate"	1 gramo,
"Pilocarpin hydrochlorid"	2 gramos,
"Strychnine sulphate"	$\frac{1}{2}$ gramo.

o de la misma manera que el vacunar contra mor-
g). Se emplea una jeringa hipodérmica de 4
ación. Es preferible disolver la tableta en agua
s posible, hervida. No se repite la dosis.

*Uso de ganadería para reducir las pérdidas por
consólida real.*

ontra la consólida real en pedazos de terreno bien
o más sencillo para prevenir pérdidas es bien
hierba la planta al menos 6 pulgadas debajo de la
El precio medio para eso no debe superar 5 a 8

nos es practicable primeramente dejar las ovejas
os de consólida real hasta que la vitalidad de las
ucida. Mientras tanto se reserva los terrenos no
anado.

anchos se debe siempre proveer sal liberalmente.
a real es preferible establecer terrenos de saladura
de los terrenos infestados por las plantas venenosas.
congrega donde la consólida real abunda.

conducir ganado muy hambriento por terrenos de
atras que el estómago está vacío los animales comen
generalmente no tocan; y como la consólida real
abrosa el riesgo de pérdidas es muy aumentado
están hambrientos.

DEATH CAMAS. (ZYGADENUS.)

comunes aplicados a "death camas" en los ranchos
ison wild onion," "poison sego," "poison camas,"
"lobelia." Sin embargo, "death camas" es el
y el que se debe emplear.

Descripción de la planta.

es una planta erguida que genera 5 a 7 hojas
ba gruesa. Crece de un bulbo de tongas puesto de
el suelo. Este bulbo es de $\frac{1}{2}$ a $1\frac{1}{4}$ pulgadas de
o de envolturas finas parecidas a papel como se ve
ojas son de 6 a 18 pulgadas de largo por un poco
lgada de ancho y tienen semejanza a hierba con
mo una quilla de barco en el lado inferior. Tienen
son más espesas que las hojas de hierba comunes.
arcado y las hojas aparecen como si viniesen de la
Las flores son de color amarillo-verdusco o blanco,
más o menos de ancho y producen un racimo de
a 10 pulgadas de largo. En placa II se ve la
"death camas."

frecuentemente tomadas por "death camas."

"death camas" comunmente con la cebolla silvestre
bulbo y las hojas de "death camas" no tienen, sin
e la cebolla silvestre y todas las flores de ésta crecen
en la extremidad del pedúnculo, mientras que las
nas" se generan al lado del pedúnculo como se ve

Distribución y regiones donde crece el "death camas."

El "death camas" se encuentra en casi todos los ranchos de N. y los terrenos en que florece son invariablemente húmedos durante primavera. Los lugares principales en que se lo encuentra son de artemisia, (2) de hierba, (3) prados y (4) terrenos típicos de hierba donde la vegetación consiste en plantas vistosas que producen flores. Se lo encuentra en los ranchos a mediados de Marzo y al Junio ha muerto generalmente y el peligro de la planta ha desaparecido.

Animales que se envenenan.

Esta planta es venenosa a todas clases de ganado y especialmente a las ovejas. Los caballos comen raramente bastante para causar muerte pero a veces hay pérdidas de vacuno cuando éste pasa en condiciones hambrientas por el rancho.

Partes venenosas de la planta.

Todas partes de la planta son venenosas pero comúnmente los animales comen las flores y las hojas mientras que el bulbo está muy bajo en el suelo y rara vez se lo arrancan.

Cantidad necesaria para matar.

Un animal muy hambriento se envenena fácilmente. En el caso de una oveja de un peso de 100 libras más o menos tiene que comer 1½ a 5 libras de la planta para envenenarse; para matar un caballo necesita proporcionalmente menos.

Síntomas de envenenamiento por "death camas."

Cuando una oveja se envenena por "death camas" el primer síntoma que se nota es que la andadura del animal es muy rígida, especialmente la de las piernas traseras. Cuando el animal cae lo hace comúnmente con la cabeza antes, las piernas delanteras siendo más débiles que las traseras.

En casos muy graves el animal yace tendido en el suelo con respiración lenta y fatigosa. De repente respira muy rápidamente para luego volver a respirar lentamente. Con frecuencia se observa un babosear de la boca con un molimiento de los dientes. El paño es de color azulado. Casi invariablemente los animales envenenados vomitan. Se ha notado muchas veces que los animales tendidos en el suelo y respirando fatigosamente de repente dan fuertes puntapiés que tuercen el cuerpo y agitan la cabeza como si fuesen en agonía. Al fin mueren así pero la mayor parte entran en un estado de insensibilidad profunda de que no se puede despertarlos y así mueren.

Medios preventivos.

Las ovejas muestran gran cuidado en el escogimiento del forraje mientras que pastan tranquilamente en los ranchos. Pero cuando se las conduce de un lugar a otro no pueden escoger su forraje y así comen todo lo que no es enteramente contra su voluntad. Entonces, si hay "death camas" se lo comen en cantidades más grandes que de las que pueden descartar y de resultas mueren. Así, para evitar pérdidas es preciso tratar las ovejas de manera que nunca estén muy hambrientas. Si se las conduce de un terreno de pasto a otro que de dejarlas tan tranquilo que posible durante una hora o dos p...

overlas. Después de eso escogerán su forraje con que las pérdidas serán muy reducidas.

rdidas es muy preciso conducir las ovejas tan lejos de los terrenos donde duermen porque más que quedarse en estos terrenos, más hambrientas en menos cuidado en lo que comen en los terrenos

de manejar ovejas, especialmente durante la primavera. Establecer un campamento permanente a que se las lleven hasta que todo el forraje en los terrenos inmediatos ha desaparecido de un radio de 2 o 3 millas. Si las ovejas comen todas las plantas, las venenosas y las malas después de resultas que habrá pérdidas. En vez de manejarlas correctamente, sería mejor dejar las ovejas que se hallen por ventura al anochecer. Así cuando amanezca al amanecer y los casos de envenenamiento serán

ha recibido sal durante una semana o diez días lo anormal y come plantas que regularmente no provee siempre proveer media onza de sal para cada una o más o menos diariamente para cada treintena de

TRAMUZ O LUPINO. (LUPINES.)

sonocenos en Nevada bajo varios nombres comunes. Están llamados "blue bean," "wild bean," "wild alfalfa,"

Descripción.

pertenece a la familia de guisantes y es una planta que crece a 3 pies de alto. La mayor parte de las especies de lupino crecen en año de las mismas grandes raíces hondas. Estas raíces generan varios tallos, las hojas de los lupinos son anchas y largas. Hay 4 a 15 divisiones de hojas creciendo del ramal común como se ve en figura 8. Las vainas son largas y tienen una forma como la de varios tintes de azul, blanco, rosado y amarillo. Hay una o más semillas y generalmente son cubiertas de un peso de vello corto y fino. Este vello se encuentra en la parte superior de las hojas, dando a la planta una apariencia como si floreciera del principio de la primavera hasta el fin de la mayor parte de las flores y de las vainas durante el mes de Agosto. En placa III se ve la apariencia típica del

Distribución y regiones donde crece el lupino.

de las plantas más copiosamente distribuidas en los terrenos bajos. Se lo encuentra en todas las elevaciones bajas y en los terrenos secos con excepción de los que son excesivamente húmedos que tienen demasiado álcali.

Animales que se envenenan.

En las secciones de los ranchos los lupinos pueden ser comidos por el ganado. Las pérdidas principales resultan, cuando las ovejas comen el lupino después de que las vainas se han caído en las vainas. En el otoño cuando el otro

forraje escasea y lo que se queda es seco el lupino aun florece. En las ovejas se lo comen y de resultas se envenenan. Cuando el tiene semillas en las vainas es preciso no dejar las ovejas pastar en terreno donde se lo encuentra a no ser que hay otras plantas que fueran. Sin embargo, por todo el estado de Nevada hay un pequeño que vive en las vainas del lupino y se alimenta de las semillas. Entonces las vainas aparecen como si contuviesen semillas examinandolas bien se ve que no las tienen y por eso no son venenosas.

Partes venenosas de la planta.

La mayor parte de las pérdidas son causadas por las vainas y semillas. En ciertas condiciones de los ranchos todavía no bien minadas las hojas y las partes superiores de las plantas a veces producen pérdidas.

Cantidad necesaria para matar.

La cantidad que un animal tiene que comer para envenenarse muy variable. Pruebas de alimentación muestran que para un animal de cien libras de peso necesita $\frac{1}{4}$ a $\frac{1}{2}$ libra de semillas sólo y madamente $1\frac{1}{2}$ libras de vainas y semillas juntas para matar.

Síntomas de envenenamiento por lupino.

El síntoma más común de envenenamiento por esta planta es la manera de que respira el animal. En casos agudos el animal respira con gran dificultad. Durante estos períodos de respiración difícil el animal se tuerce violentemente y con gran excitación mental o corre en dirección indefinida, topeando con los animales del rebaño o con cualquier obstáculo que encuentre en su paso, tal que morral, árboles o rocas. Acompañando la respiración difícil generalmente hay un babosear de la voz. El paladar es comunmente de color azul. Muchos animales mueren en estado de espasmos violentes. Otros entran en un sueño profundo que no se despiertan.

En casos menos agudos la respiración es fatigosa y las ovejas quedan de pie o reposen en un sueño profundo. Otro síntoma consiste en que las orejas se inclinan y la oveja topeta otros animales o obstáculos con la cabeza. Después de que el animal ha pasado un período de respiración fatigosa se queda temblante por todo el día. Figuras 10, 11, 12, 13 muestran el ademán típico de ovejas envenenadas por lupino.

Método de manejar ovejas para evitar pérdidas.

Si se conduce ovejas que están en estado hambriento por terrenos donde florece el lupino, ellas comerán rápidamente las plantas particular las vainas y las semillas, en cantidades suficientes para matar. Por esta razón es preciso nunca conducir ovejas en estado hambriento por terrenos donde se sabe que florece cualquier planta venenosa. Cuando es necesario conducir ovejas una distancia considerable por terrenos infestados por lupino es muy importante que las pastar tranquilamente durante las primeras horas. Después, en vez de moverlas rápidamente con perros, hay que dejarlas esparcirse tanto que posible y pasar así por los terrenos peligrosos.

CIOUTA. (WATER HEMLOCK.)

Otros nombres comunes para esta planta son "cowbane," "wild silvestre" (wild parsnip), y "chirivía venenosa" (poison parsnip).

Descripción.

planta que florece en pantanos. Es de 2 a 6 pies de altura con lisos vástagos huecos de color verde creciendo de raíces gruesas y ahusadas (figura 14) que tienen ramificaciones cruzadas partiendo el interior de la raíz en forma como se ve en placa IV. Esta placa muestra una hoja que las hojas son doblemente divididas y cada hojilla es estrecha y dentada por lo largo del borde. Genera flores blancas en macollas compactas en las extremidades de las

Plantas comunmente tomadas por cicuta.

En la raíz de la cicuta longitudinalmente se ve las cámaras y las cámaras pequeñas ya mencionadas. Sin embargo las plantas que tienen la misma estructura de la raíz, como el anís dulce (sweet anis) y la berraza (water parsnip), parecen en suelos muy húmedos pero se lo encuentra a menudo en riachuelos de la montaña y en lugares transcurridos. Las hojillas del anís son mucho más anchas que las de la cicuta. El anís florece durante la primera parte del verano, pero la cicuta no florece antes de pleno verano. El anís es venenoso y envenena el ganado.

En lugares húmedos como la cicuta. Pero, se puede distinguir ésta de aquélla en que las hojas de la berraza no son como las de la cicuta son divididas o ramificadas (figura 15).

Distribución y terrenos donde florece la cicuta.

La planta que florece en lugares muy húmedos como en las orillas de zanjas de regadura y de riachuelos, en los prados (tule) y en prados silvestres de heno. No tiene olor fuerte. No se la encuentra nunca afuera de terrenos muy húmedos.

Animales que se envenenan.

La cicuta es venenosa para todas clases de ganado. En Nevada la pérdida consiste en ganado vacuno. Raramente en cerdos, caballos u ovejas.

Partes venenosas de la planta.

Las partes superiores de la planta son venenosas pero las raíces lo son mucho menos.

Uso de raíz de cicuta necesaria para matar.

Una porción pequeña de la raíz de la planta para matar. En los casos graves relatados eran causadas por una onza de grandor de un huevo de gallina o menos.

Síntomas de envenenamiento por cicuta.

Los síntomas son: (1) contracción nerviosa de los músculos de las orejas; (2) generalmente náusea y vómito en los vacunos y de ovejas; (3) un babosear cuantioso de la boca por todo el cuerpo; y (4) espasmos violentos con convulsiones y un encorvar hacia atrás de la cabeza y del

cuello. Los intervalos entre los espasmos disminuyen hasta animal se queda insensible y al fin muere.

Remedios.

No se ha encontrado todavía un remedio satisfactorio y eficaz envenenamiento por cicuta. Es preciso perturbar el animal tan que posible para aumentar la suerte de su recuperación.

Métodos de manejo para disminuir pérdidas por cicuta.

La cicuta tiene tan poca distribución y abundancia que es muy exterminarla en los ranchos donde causa pérdidas en que se des la planta y las raíces y las quema o las entierra hondamente. terrenos de pasto es muy fácil reunir las ovejas afuera de los l donde crece la cicuta cuando el pastor conoce la apariencia de la p

WESTERN GOLDENROD. (SOLIDAGO.)

Hay dos especies de "goldenrod" que causan pérdidas en N Todos crecen en terrenos de heno silvestre, en dehesas permanen en campos abiertos y bien desaguados de las montañas.

Descripción.

Los "goldenrods" que causan pérdidas son de un pie o más de y tienen hojas indivisas. Alrededor de la base de la planta las se adelgazan hacia el tallo. Las hojas que se generan en el tal angostas, dos a cuatro veces más largo que ancho y redondeadas menos en perfil. Las hojas que se generan cerca de o juntas flores son pequeñas, angostas y llanas. Les flores son amar crecen en macollas espesas al cabo de un vástago ramificado. P muestra la apariencia típica del "goldenrod." Es esta especie planta que ha causado muchas pérdidas en Nevada.

Distribución y terrenos donde crece el "goldenrod."

En Nevada el "goldenrod" crece en terrenos de heno nativ terrenos de pasto bien desaguados y en campos abiertos y pra las montañas. No se lo encuentra en terrenos áridos de artemisia donde crecen el herbajo y la hierba seca.

Animales que se envenenan.

Hasta ahora las pérdidas notadas consisten sólo en ovejas que comido esta planta en terrenos de pasto o mezclada con heno.

Partes venenosas de la planta.

Los animales comen sólo la parte superior de la planta, especial las hojas, las flores y los tallos tiernos.

Cantidad de "goldenrod" necesaria para matar.

Algunas ovejas se han envenenado en que habían comido 1.1 de la planta verde. Otras pérdidas han resultado de que los an habían pastado en la planta que era mezclada con heno o la comido en terrenos de pasto donde había una abundancia de plantas. Eso prueba que la planta es muy venenosa y que sólo cantidad pequeña es necesaria para matar.

Síntomas.

eros consisten en salivación o babosear acompañado continuo de las mandíbulas y de los labios. Hay tanto continuo de las orejas y de la cabeza con una te y violenta de los músculos del cuerpo. Cuando acciones parece que el animal tentase de sacudir llón. Mientras que el animal se sacude así hay un rso. Las piernas son generalmente muy juntadas ecogidas bajo del cuerpo. Un ruido repentino del vellon ya descrito. Las contracciones de los con la cara y con la cabeza, entonces pasan por el o y finalmente afectan las piernas. Después de ser s animales dejan el rebaño sin ningún motivo y se en una condición aturdida, plantando los pies n la cabeza erguida. Se quedan en esta posición o más. Entonces hay un estremecimiento de los nas, del cuello y del dorso con una flaqueza repen- ancia de andadura. La oveja cae generalmente espasmos. Las pupilas se dilatan y los sentidos de son completamente trastornados. Tan pronto que may un mascar de las mandíbulas, un babosear, un e la cabeza y un temblor del cuello. Parece que envenenados tuviesen un deseo indomable de asir una piedra o un palito y masticarlo durante horas

Consejo para reducir pérdidas por "goldenrod."

han resultado de que se ha dado a las ovejas del do con heno. Si el heno es destinado para ovejas ar los terrenos donde crece el "goldenrod" y el nos debe ser amontado en lugares particulares y los caballos, animales que hasta ahora parecen ser tos venenosos de esta planta. Cuando se pasta las onde crece el "goldenrod" hay que dejarlas la más ble en su selección del forraje. Para mantener un y que darlas sal regularmente y en abundancia. "goldenrod" crece espesamente en pedazos de ter- resultas que es muy facil pastar las ovejas afuera Para hacer eso hay que conocer bien la planta y otras. Placa V muestra bien la apariencia de esta seca el "goldenrod" mezclado con heno las flores nte se quedan en la planta de resultas que es muy acaso se sospecha que la causa de pérdidas esté en

RABBIT BRUSH. (TETRADYMIA.)

menosa durante ciertas sazones del año y en ciertas ntemente ha causado la pérdida de unas millares e occidental de Nevada.

Descripción.

' es un arbusto rígido de 1 a 4 pies de altura. Tiene esplegados. Estos ramos son blanqueados por vellos Las hojas son lisas y verdes. Las hojas sazonadas

son delgadas y rematadas en punta mientras que las verdaderas son gruesas y sin punta. Las flores son amarillas y son sostenidas por macollas. Placa VI muestra un ramo típico de este arbusto y en la Placa 17 se ve la manera típica de su crecimiento y de su ramificación. El "rabbit brush" espinoso se encuentra frecuentemente creciendo con el "rabbit brush" antedicho. Es también un arbusto y de 2 a 3 pies de altura. Tiene los ramos muy separados. Estos son cubiertos por un vello espeso y blanqueado. Tienen espinas derechas o curvadas a la vez de las hojas principales. Según lo que se ya sabe el "rabbit brush" espinoso no es venenoso.

Distribución y terrenos donde crece el "rabbit brush."

Se encuentra el "rabbit brush" en terrenos áridos de artemisia y de vegetación característica con que crece consiste en artemisia, "sage," "white sage," "shad scale" y las salivas verdes (green sage). Frecuentemente se encuentra el "rabbit brush" donde no hay otra vegetación. Solo lo encuentra nunca en terrenos montañosos.

Animales que se envenenan.

Es probable que sólo las ovejas se envenenan.

Partes venenosas de la planta.

Durante la primavera este arbusto produce pimpollos y hojas nuevas. Estas partes de la planta han sido la causa de las pérdidas.

Cantidad de "rabbit brush" necesaria para matar.

Según lo que se sabe hasta ahora, una oveja para envenenarse debe que pastar exclusivamente en esta planta hasta que el estómago está casi lleno. Las hojas verdes y tiernas y los pimpollos contienen por ciento más o menos de potasa, un veneno fuerte. Este veneno puede ser la causa de las pérdidas de ovejas. La mayor parte de las pérdidas en Nevada consistía en animales muy hambrientos o que eran mantenidos en haciendas durante todo el invierno y después conducidos por terrenos donde florecía el "rabbit brush."

Síntomas.

Después de que una oveja se ha llenado el estómago con bastante "rabbit brush" se pone muy torpe. Vacila y a veces cae de repente en un condicion insensible con la cabeza torcida a un lado. Entonces se produce un espasmo de los músculos. Los ojos se comban y saltan a los lados. La respiración es muy ligera. La nariz y la cara se arrugan como si la nariz estuviera obstruida por cualquier obstáculo. Los animales están tendidos en el suelo casi siempre trituran los dientes después de que se hinchan. Hay especialmente un hinchar de la cabeza y de las orejas en los casos de muchos de los animales envenenados. Un rayado por sangre viene de la nariz. El animal muere generalmente en un rato de cinco minutos a una hora después de caer.

Remedios.

Cuando una oveja está envenenada por "rabbit brush" hay pocas posibilidades de que se puede hacer para curarla. Generalmente cuando hay casos de envenenamiento en un rebaño es probable que muchos animales están tendidos en el suelo al mismo tiempo así que un tratamiento para ellos es imposible.

io para disminuir pérdidas por "rabbit brush."

pérdidas casi enteramente en que se pasta los animales. La cosa más importante es el saber que las ovejas cuando están muy hambrientas o cuando hay forraje. El pastor debe aprender como se distingue esta planta por su vista. Cuando ve que las ovejas pastan casi en las partes tiernas y verdes de esta planta debe conducir las a terrenos donde no hay "rabbit brush." Preciso saber esto cuando se conduce los animales de cuando están en terrenos de pasto a lo largo de cuando no están en los corrales de esquila y después de transportado una gran distancia de resultas que están

WEED. (ASTRAGALLUS O ARAGALLUS.)

de esta planta viene de que los animales envenenados si fuesen en un estado de locura.

Descripción.

Muchas especies diferentes de "loco," algunas de las cuales son pérdidas. Los "locos" pertenecen a la familia de la flor típica del guisante. Esta flor se genera en la extremidad del pedúnculo y tiene varios colores de amarillo, de blanco y de rojo. La vaina es generalmente parecida a la del guisante y contiene dos semillas. Las hojas son de una estructura particular que puede fácilmente distinguir el "loco" de las otras plantas de pasto. Estas hojas son compuestas de muchas folíolos en los dos lados del pecíolo. Hay siempre una glándula en la extremidad del pecíolo como se ve en figura 19.

Distribución y terrenos donde crece el "loco."

Estos locos son distribuidos por todo el estado de Nevada. Se encuentran en los terrenos de pasto con excepción de los prados bien arboledados y los terrenos llenos de álcali.

Animales que se envenenan.

Los animales se envenenan por "loco" pero las ovejas y caballos son más susceptibles que el ganado vacuno. Las vacas no son muy importantes y ocurren principalmente en el sur del estado donde hay pocos animales en los terrenos de carencia de agua y de forraje.

Síntomas.

Los animales mueren de dos maneras: (1) por envenenamiento agudo de que los animales mueren en pocos días y (2) por envenenamiento crónico después de que viven de seis meses a un año.

El síntoma característico de envenenamiento por "loco" es la debilidad sobre los músculos de resultas que la andadura es semejante a la de un borracho. El sentido de la dirección el animal no puede juzgar correctamente el tamaño y la distancia de los objetos. En los casos más graves se queda enteramente ciego. La conducta frecuentemente de un modo que el animal no

puede determinar de que dirección viene un sonido. El ganado y los caballos llevan la cabeza bajo generalmente, el pelo deviene áspero y la andadura es muy vacilante y lenta. En el caso de que con frecuencia hay un arrojar de la lana general o en pedruzcos el dorso es muy arqueado y especialmente hay un estremecimiento de las piernas y de las rodillas. Es casi imposible retener las ovejas en rebaños o conducir las en una dirección determinada. A veces el sentido de la vista se afecta tanto que no pueden ir a buscar con el rebaño de resacas que se las encuentra después muertas en barrancos o ahogados en los riachuelos o en los abrevaderos.

Un resultado del pastar casi exclusivamente en "loco" es que el animal muere de debilitación y de hambre. Un animal envenenado se pone al fin muy abatido, los ojos son húmedos y generalmente queda abandonado por hombres y por bestias. Se queda durando y aun semanas en un terreno pequeño sin agua y con poco forraje que la muerte lo relieves.

Métodos de manejo para reducir pérdidas por "loco."

Los "locos" capaces de causar los síntomas característicos son los insectos y los animales los tocan raramente excepto cuando están hambrientos o están en terrenos de pasto bien apacentados o por el "loco" es la planta predominante. En estas condiciones los animales comen el "loco" por fuerza. Cuando han desarrollado un hábito para esta planta se la comen con preferencia a todo el otro forraje.

Cuando los animales pastan en terrenos infestados por "loco" que guardarlos bien y tan pronto que principian a dar signos de envenenados es preciso separar los que son así envenenados de los animales del rebaño, ponerlos en vallados y engordarlos. Si es posible es preciso conducirlos a terrenos de pasto donde no hay "loco". Los animales desarrollan el hábito de comer "loco" cuando hay mucho de forraje sabroso y nutritivo. Después de que un animal ha adquirido el gusto para "loco" no se debe nunca dejarlo correr por terreno donde crece esta planta. Para evitar que las ovejas desarrollen el gusto por "loco" es preciso pastarlas en formación abierta y dejarlas graciosas en su escogimiento del forraje. También es importante que no pasen la noche por donde se encuentran al anochecer y no comen a un campamento particular.

Cuando las ovejas pasan algunas noches en el mismo terreno natural que pastan antes en las plantas más sabrosas y dejan la planta que los "locos" hasta al fin. Si continúan a pastar en el mismo terreno hasta que no hay más plantas sabrosas el resultado es entonces comen el "loco" por fuerza y así desarrollan el gusto por esta planta venenosa. Además de eso, cuando el animal está hambriento no es muy escrupulosa en el escogimiento de su forraje. Eso es importante conducir los rebaños de los terrenos donde de tan temprano que posible porque más tiempo que se quedan hambrientos en terrenos más hambre tendrán de resacas que la probabilidad de comerán del "loco" será muy aumentada. Especialmente hay que pastar los corderos con cuidado porque desarrollan el gusto por "loco" más fácilmente que los animales más viejos. Si se separan los corderos de sus madres para algún rato durante que se pastan los rebaños apretadamente el resultado es que los corderos devienen hambrientos y en esta condición la probabilidad que comerán el

Es importante siempre proveer bastante sal para apatitos perversos.

ELÉBORO SEUDO. (FALSE HELLEBORE.)

Comunes en los ranchos para esta planta son: "cow dian corn," "Indián poke," "hierba fétida" (skunk weed) y "swamp hellebore."

Descripción.

De 2 a 6 pies de altura y tiene raíces gruesas y cortas. Hojas anchas, abrazadas, veteadas y alechugadas. Las flores son cubiertas de un vello fino. Las flores son de color verde oscuro o blanco-verdusco y amarillo. Figura 22 Eléboro pseudo como florece en los ranchos.

Distribución y terrenos donde crece el eléboro pseudo.

Se encuentra muy distribuida en Nevada. Sin embargo se la encuentra solamente en ciertos terrenos montañosos donde el suelo es húmedo y donde hay gran cantidad de agua.

Animales que se envenenan.

Hasta ahora sólo las ovejas se envenenan. Se han visto casos de envenenamiento en ranchos bien pastados donde las ovejas habían comido vorazmente el eléboro pseudo de resultados fatales y algunas murieron.

Síntomas de envenenamiento por eléboro pseudo.

El primer síntoma notado consiste en una salivación copiosa y en vomitar o un tentar de hacerlo. En los casos de envenenamiento hay una gran flaqueza de los músculos, estremecimientos y parálisis general. En los casos de todas las ovejas demasiado débiles para quedarse en pie la respiración es muy reducida, la piel fría y la vista afectada. La muerte resulta finalmente.

Medicamento para reducir pérdidas por eléboro pseudo.

Se consisten generalmente en corderos. Para evitar el envenenamiento pseudo hay que dejar las ovejas comerlo sólo en ningún modo. Como la planta crece en áreas bien drenadas es practicable evitar que los animales pasten en ellas y así no comerán bastante para hacerse daño.



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FOREWORD

ber of the Alumni Bulletin, the University sends
umni and others interested in the welfare of the
lletin is for the alumni, and the University invites
on of all the alumni in making it worth while.
ing made for the second number. If any one has
articles of interest, let him send these in.

ark is presented to many for the first time in these
eady won for himself a welcome throughout the
a unselfish patriotism, high ideals and vigorous
s marshaling the forces of the University for the
and the upbuilding of the institution.

wishes it to be understood that business is going on
l. To this business as usual, however, has been
usiness of participating in a world war. In war
has naturally been the rallying ground for Nevada.
n and young women of the State have come to
best serve or receive specialized war training.

is doing much for the war, the war is also doing
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out of it are contributing their part and have
No one can enter the campus without feeling that
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nmonwealth can muster for the big task of recon-
neantime it is training for the immediate service
g freely of its faculty and students.

H. W. HILL,

Professor of English and Editor of the Bulletin.



Walter E. Clark, President of the University.

PROFESSOR WALTER E. CLARK*

By LEWIS F. MOTT.

Professor of English in the College of the City of New York

After sixteen years of service at the College of the City of New York, Professor Clark will leave us on the 1st of January to assume actively the duties of the presidency of the University of Nevada. He is already head of that institution, his official appointment dating from September 1, but he obtained leave of absence of four months so that our college might not be embarrassed by his sudden departure. The interim he has improved by accomplishing some work for the University in Washington and Albany. He has conducted negotiations and studied systems and attended meetings, such, for example, as that of the American Agricultural Colleges and Experiment Stations.

While his colleagues in the faculty congratulate Professor Clark upon his appointment and wish him the fullest success in his new undertaking, they regret to lose in him a prominent scholar, a vigorous teacher and a very active participant and leader in departmental and academic movements.

Professor Clark's scholarly productivity begins with his volume "Josiah Tucker, Economist" (1903), written as a thesis for his doctor's degree at Columbia University, and his latest production is the addition of about two hundred pages to the fourth edition of "The Trust Problem" (Doubleday, Page & Co.), as coauthor with Professor Jenks. This matter consists of chapters I, XIII, XIV, XV, and Appendices D (excepting that portion on the United States Steel Corporation), E, F, and H. Between these two publications we have from his pen contributions to Everybody's, The Review of Reviews, and various technical publications; about a dozen articles in Nelson's Loose-Leaf Encyclopedia, including those on Corporations, Income Tax, Rising Prices, Tariff, Trust Companies, and Trusts, this last really equivalent to a book, its length being fourteen thousand words; a chapter on Bonds in "How to Invest When Prices are Rising," and a volume on "The Cost of Living" (A. C. McClurg & Co., 1915), which was reviewed in the Quarterly for October, 1915. In addition to his activity as a publicist, Professor Clark has also extended his reputation as a lecturer. He has given courses in the series of The Board of Education; for four years he delivered from eight to fourteen lectures a year before the Junior League; he has led conferences on economic subjects in private houses for people prominent in the financial and social worlds; and he has during the past two years conducted courses for employees for the New York banks at the National City Bank and before the New York Chapter of the American Institute of Banking.

Industrious as he has been in presenting economic subjects to the public, Professor Clark has never allowed the avocations to interfere with the vigorous performance of his college duties. As a teacher he

*Reprinted, with the consent of the author, from the City College Quarterly of December, 1915. Professor Mott is and has been for many years the editor of this quarterly, published by the Associate Alumni of the College of the City of New York.

has made a vivid impression upon the hundreds of students who have listened to his lectures on economics and taken part in his classroom work. Dr. George Williams Edwards (June, 1911) has kindly contributed his estimate from the standpoint of the younger graduates:

A few decades ago economics rarely found admission into the college curriculum. With the practical and popular application of sciences and their rapid development, society has been led again and again to dispute educational values. Following each successful readjustment, economics has been given a more distinctive and a more honored place in colleges, until today this science has fairly won its own. Economics has been raised to its high level by the unflagging efforts of men with faith both in this subject and in its value to the human race. One of these is Dr. Walter E. Clark, who established the Department of Political Science in our College. The students of his first classes in 1901 and all who have sat before him recognized him as an effective teacher of fine scholarship and as a sympathetic advisor of deep human experience. In the lecture hall none fail to respond to the force of his enthusiasm, optimism and personality. Outside the classroom, many were guided by Professor Clark's knowledge of the business world, and trod with surer steps that uncertain road which lies just beyond graduation.

Not long ago the City College man was brought abruptly to the painful realization that the position of school teacher was only for the few. At this parting of the ways, Professor Clark, prompt and farseeing, pointed out that the new condition was not of necessity an unmixed misfortune. But above all he offered practical courses which opened new fields of opportunity.

As a teacher of political science, his aim has been to develop character, efficiency, and good citizenship. His method is by example, in accordance with that valuable educational precept: "Learn to do by doing." Though not an alumnus of the College of the City of New York, he has always identified himself with the important activities of our Alma mater. The impress of his personality, we gratefully feel, will be abiding.

When Professor Clark entered the Department of Philosophy in 1901, there were only two single-term courses in economics, the caption Moral and Intellectual Philosophy covering the whole field of politics, economics and sociology, as well as psychology, philosophy proper and education. In 1902 he was made instructor, in 1906 assistant professor and in 1907 associate professor and head of the newly created Department of Political Science. In 1910 he was promoted to professor. During the period since 1907 the department has grown from two to thirty-seven term courses and the personnel from two to nine teachers. Each of the three branches of the subject, politics, economics, and sociology, has its own group of courses and special teacher, Professor Clark himself dealing with economics. Recently there has been a large expansion by the introduction of business and commercial subjects. The tendency is distinctly toward a College of Commerce, an institution proposed some three years ago by Mr. Schiff, seriously considered by the city authorities, but dropped at that time for financial reasons. In the negotiations then conducted Professor Clark bore an energetic and laborious part.

On faculty committees Professor Clark has been unremittingly employed, dealing with such diverse matters as athletics, vocational training, relations with city employees, war preparation, course of study, and a dozen others. He was a member of the Joint Committee on College affairs which acts in consultation with a committee of the Board of Trustees. In the Faculty of Social Science* he was the leader in proposing, constructing and carrying through the College

*The College Faculty is now subdivided into three faculties, Arts, Social Science and Science, each with certain specified functions and each reporting to the general body.

social Science Course, which was added a year ago
g undergraduate courses in Arts and Science.

energy came to us from Ohio. He was born in
s father was Superintendent of Schools, a position
quished for the ministry. In pursuing his vocation
stricts, the elder Clark early lost his life by sickness,
as left poor and fatherless. He passed through the
gh schools in Delphos, Ohio, and then worked for a
a dry-goods store, where he had already had jobs
chool. At 18 he entered the Ohio Wesleyan Univer-
Ohio, a college from which his father had graduated
e. Here he spent eight years, five in obtaining his
l his way through college, and three as instructor in
olitics. While teaching he obtained the M.A. degree
99 professor Clark began his studies in political
a University, obtaining the degree of Ph.D. in 1903.
ing these studies that he obtained his first appoint-
e of the City of New York. We may add that for
03 he was resident and settlement worker at Green-

Clark, who possessed practical and first-hand informa-
ickens and cows and other agricultural mysteries,
rs, Doctors Sickles and Storey, are probably the
authorities, but every colleague of the departing
illingly testify to his attractive personal qualities.
ys been resolute in enforcing his opinions, he has
semblance of a quarrel with opponents, for he knows
firm and good-tempered. He will be missed on St.
as a tireless worker, a wise, temperate and level-
d a frank, kindly, and warm-hearted friend.



AR ACTIVITIES OF THE UNIVERSITY OF NEVADA

INTRODUCTION AND SUMMARY

By WALTER E. CLARK,
President of the University

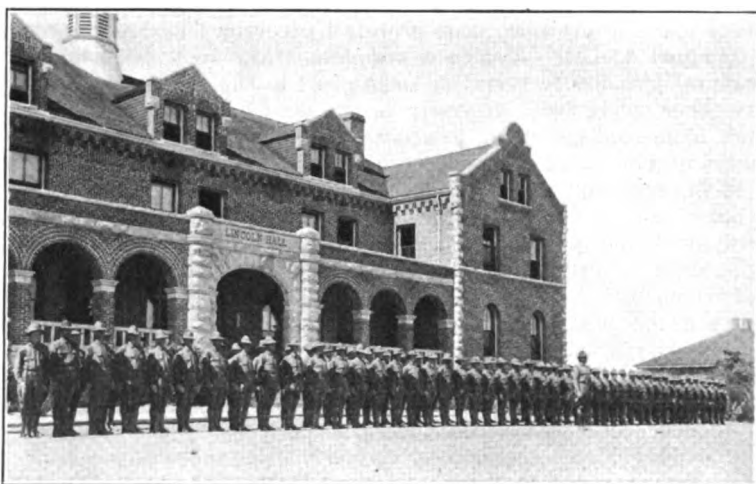
Progress in the arts and sciences which create and civilization and deviating no whit from its tradition a promoter of the cult of sweetness and light, the dirded its loins for war during this year.

University's students and staff are now in khaki. In the active roll of our University at the close of 1918, compared with one hundred and ninety men was declared in April, 1917—this is one fact. Two y-nine stars on our University Service Flag at this 18—this is a supplementary fact. Splendid as is ity response to the call to the colors, it is doubtful or University in the land has sent into the service e of its graduates and undergraduates. Thirteen ulty have also taken leave of absence for the dura- are now in Government service. The University ord of two hundred and ninety-two in all, students, members, who have entered war service. There nber of other alumni who are now in the service, iversity has no service record yet.

campus has reflected the war from every angle of rk. Men were trained by the engineering, mathe- professors in radio and buzzer work during Janu- Deft Manzanita hands, encouraged by Dean Mack, Miss Stroud, have been tirelessly knitting and pred surgical dressings by the thousands. Librarian ed and is forwarding to the boys at the front over from people of the city and from people scattered ate. Professor Thompson has secured a staff of e faculty who are publishing articles in papers of ng addresses at many places in the State to develop ent on the great war issues. Mr. Kennedy in the ry has been testing bandage cloths for the Red Director Doten and Mr. Fleming have been extend- he interest of more mutton and beef for the soldiers. nd Sears have been analyzing oil shales and deter- nes of various Nevada woods. Professors Jones and e been spreading information about war metals and services to the Government this summer, examining throughout Nevada. Professor Lewers is a mem- ouncil of Defense and has been keeping in touch e front. Miss Sissa and Mrs. Blaney have compiled ll in service. Miss Sameth and her dancing classes rench orphan. Professor Schappelle has given a e in army French. Dean James added a special

Red Cross training course in first aid to the injured to the summer session work. Major Ryan has raised the military standards of the Cadet Battalion to the full requirement of the Reserve Officers' Training Corps now established here, and has been the active head of the University War Council, which is the clearing-house for all University war activities. Director Norcross has superintended the taking of the state farm census, and through his extension staff has carried the helpful word on such things as war breads and food production to the ends of the State. Dean Knight is in special charge of labor problems for the State Council of Defense, and his efforts helped Nevada fill her quota of shipbuilders, to extend war gardens, and greatly to increase food production.

On Red Cross, Y. M. C. A., War Stamp and Liberty Bonds on the Hill, students and faculty together, guided by active joint committees, and aided at every turn by Comptroller Gorman and his staff, have uniformly gone "over the top" at each drive.



Training Detachment of Enlisted Men.

Eighty high-school boys were given leaves of absence by their respective schools to take special training here at the University during the month of April in practical farming methods, including the handling of gas engines and tractors, with the view of fitting them for food production this summer. Over a score of women signed up for special food conservation courses given by Miss Sears during this same month. Fifteen of these women enrolled to learn to run tractors.

The University contracted with the Federal Government to give special training to one hundred and three newly enlisted soldiers for two months beginning June 15, 1918. These soldiers are housed in Lincoln Hall and are given the freedom of the campus for their leisure and for their military training. The University has equipped them with rifles for the manual of arms training. Six hours each day of their time is being devoted to the practical arts, and for this purpose they are divided into five groups. Fifteen men are being trained in rough carpentry under Mr. Fraser; fifteen men in concrete work under

men in electric repair work under Professor Stan-
fifty men go daily to the Southern Pacific Railroad
Of these latter fifty men, twenty are being trained
and thirty in locomotive repair work..

was ready to begin this special soldier training work
Commencement, May 8. The Government, however,
at to mobilize soldiers in time to send them early in
been possible, the University would have been able,
to train a second relay before the opening of the
work in the Fall.

ve been completed which will bring for similar
undred of new soldiers for the two-month period
15. The trend of these negotiations indicates that
that the War Department may desire the Univer-
maintain a training school for new soldiers for the

several phases of University war activity during
covered in the following series of reports made by
ulty who were leaders in this war work:

WAR ACTIVITIES OF THE UNIVERSITY

By ROBERT LEWERS,

Vice-President of the University

declared on Germany by the United States, Hon.
irman of the Board of Regents of the University of
g President Robert Lewers sent simultaneous tele-
Wilson offering all the facilities of the University
overnment. To be able to meet emergencies is the
ublic institutions, and students and officers of this
the alert to do what they can. Even more spon-
official action of the officers was the enlistment of
ny and navy. They were on the starting line ready

Board of Regents passed a general resolution giving
o any employee of the institution who wished to
navy, with the assurance that his place would be
hen the war ends. The persons affected are Dean
n, Food Inspector Sanford C. Dinsmore, Albert W.
H. P. Boardman, J. B. Menardi, P. G. McKinlay,
npton, and Professor C. W. Spencer.

, 1917, President Benjamin Ide Wheeler of the
ornia, at the request of the President of the United
nference of the land-grant colleges on the Pacific
and Nevada sent a delegation consisting of Regent
eting President Robert Lewers, Director Samuel B.
riment Station, Director Charles A. Norcross of the
nsion Service, and Dean Charles S. Knight of the
ure. The convention outlined plans for increasing
Pacific Coast; and the practical measures adopted
ng up crop production for 1917. On the return to
letter was sent out by Acting President Lewers, call-

ing for the cooperation of all farmers and stockmen, and for the planting of home gardens. Then Dean Knight and Director Norcross took up the work in their departments in detail, and it is safe to say that the acreage devoted to wheat was increased at least one thousand acres in Nevada. The season was pretty well advanced when this work commenced and the response is all the more creditable. Dean Knight issued the following bulletins: "Home Potato Patchés," "Field Crops for Late Planting," "Grain Production in Nevada," "Potato Culture in Nevada," "Silage Crops for Nevada," "Forage and Root Crops," "Irrigation of Wheat in Nevada," and "Irrigation of Alfalfa in Nevada."

In May, 1917, Governor E. D. Boyle appointed the following Emergency Council to study production and labor problems: Dean Chas. S. Knight, Chairman; Director Chas. A. Norcross, Director Samuel B. Doten, Fred Dangberg of Minden, Thomas Dolf of Fallon, Joseph W. Wilson of Mason. Subsequently the following representatives were added to the council: W. W. Parke of Lovelock, John Henderson of Elko, R. M. Chaplin of Reno, George A. Raymer of Reno, and Henry M. Hoyt of Reno. These gentlemen did their work well, but under the law the Governor, Attorney-General, Controller, and Secretary of State composed the Council of Defense. The Governor later called upon several private citizens of Nevada to aid the four state officers, and the permanent Council of Defense is now composed of Governor E. D. Boyle, Secretary of State George Brodigan, State Controller George A. Cole, Attorney-General Geo. B. Thatcher, S. H. Brady of Tonopah, W. D. Forster of Goldfield, Geo. A. Campbell, H. A. Lemmon, Robert Lewers, Graham Sanford, and C. R. Terwilliger of Reno. Later appointments are President Walter E. Clark of the University of Nevada, ex-Governor Tasker L. Oddie, Hon. A. Grant Miller, Frank Ingram of Sparks, Jerome Lynch of Gold Hill, and John A. Gernant of Reno.

The University of Nevada has, therefore, two representatives on the State Council, President Clark and Vice-President Lewers.

Dean Charles S. Knight is also the Federal representative of the Labor Department, and has done a great amount of work in enlisting ship carpenters and mechanics, and is doing a good deal to supply farm labor. Vice-President Robert Lewers is the representative of the Federal Department of Commerce in Commercial Economy work; principal activity in this line so far has been the cutting down of the number of store deliveries to save expense.

Field Work

The first field work was done in connection with Mr. Elwood Mead, the special representative of the Department of the Interior. The Acting President, Dean Knight, Director Norcross, and others accompanied Mr. Mead on a visit of inspection to the Truckee-Carson Project, and spent two days going over the lands. The result was a unanimous recommendation to the department to put in large tractors and clear and level the ground so that the settlers could realize full crops, even though they had to pay a little more for the land. This recommendation has, to some extent, been carried out. The University representatives also visited Antelope Valley and looked over about three thousand

acres of land that the Union Land and Cattle Company had offered the Federal Government to grow wheat upon. This offer was transmitted to the Federal authorities, but there did not seem to be any way to take advantage of the offer.

During 1917 every department of the University was seeking some way to aid the Federal Government. Early in the fall term Mr. Gale Seaman and Miss Helen Fulton, one of our own graduates, representing the Students' Friendship War Fund for the Council of North American Student Movements, and embracing in the activities the Y. M. C. A., the Y. W. C. A., and the Student Young Women's Christian Associations of Canada, came to the University to see what could be done among the students and faculty members. The faculty took up the matter informally, and after a full statement of the aims of the association, the students held a meeting and Mr. Harry Stephens, the President of the Associated Students, stated that the students had voted to raise three thousand dollars for the fund, and they did actually get subscriptions for \$2,920, giving a per capita of about \$9.50 for the enrollment at that time. This is about three times the per capita of the next highest western state institution. This shows the spirit animating the students of this institution. The very heavy enlistment of the young men bears testimony to this spirit.

The above brief review gives the main points concerning the University activities during the year 1917. With the coming of 1918 President Walter E. Clark took charge of the University and organized it on a more effective war basis. President Clark is an American first, second, third, and all the time; his every desire is to have the University do its level best for Uncle Sam. The University is a unit behind him in this work.

The first step was to appoint a University War Council to take charge of all the University War activities so that there might be no confusion. The committee in charge consists of Major J. P. Ryan, Commandant, as Chairman; President Walter E. Clark and Comptroller Charles H. Gorman, representing the ways and means and financial aspects of the work; Dean Charles S. Knight, of the College of Agriculture, in charge of the food production and conservation; Assistant Professor Stanley G. Palmer, in charge of war courses of study; Professor R. C. Thompson, publicity manager; Dean Margaret Mack, in charge of women's activities, as the Red Cross work, etc.; Librarian J. D. Layman, in charge of reading matter for soldiers; Robert Lewers in charge of letters to the soldiers, and Professor H. W. Hill, in charge of the final volume showing the history of the University during the war.

The committee on letters to soldiers consists of the Vice-President and Harry Stephens of the Sagebrush. It is concerned with the sending of frequent letters to the students who have gone into Uncle Sam's service. These letters aim to keep in personal touch with all the students and alumni in the service and to keep them informed of the doings and the spirit on the campus. A complete list of these young men and young women will be found at the end of the war activities division of this bulletin. The first letter was sent out on February 15, 1917. It is as follows:

PATRIOTIC SERVICE BULLETIN

Issued by the War Council of the University of Nevada, February 15,

COUNCIL

President Walter E. Clark, Vice-President Robert Lewers, Comptroller Charles H. Gorman, Major John P. Ryan, Dean Charles S. Knight, Dean Margaret E. Mack, Professor R. C. Thompson, Assistant Professor Stanley Palmer, Librarian J. F. Layman.

PRESIDENT'S MESSAGE:

We on the Hill are proud of you on the field. We have our beautiful banner record. One hundred and eighty-five blue stars on the white how many of our University men and women have answered the Nation. Three white stars on the red record those volunteers who have answered last call since enlistment.

We know that every enlisted University student and faculty member does his whole duty, whatever its danger or cost. It is this spirit in our ranks which will win the war.

Let us hear frequently from you. We are eager to know where you are and what you are doing.

Here at home we pledge you our hearty support. We shall do our bit in needful services back of your fighting front. In our hearts is the constant prayer that victory may soon come to your lines, the triumph of right over wrong and that you may be spared to come back to us. So, working and praying are with you in spirit all of the time.

WALTER E. CLARK

WAR COUNCIL'S LETTER:

The University feels that it is not doing its duty unless it takes an active part in the war work, and this committee has been formed for the purpose of making such work effective. We desire, first of all, to thank every student in the army and navy, for the splendid showing they have made for our country. We feel sure that such work as this will insure liberty for all, and that the Old Glory honored around the world. The service flag that is draped in our hall of honor in our library shows a star for every representative, and every one of them means something.

The University asks each student in the service to write us a letter every month so that we may keep in touch with every one. These letters will be in a public place and will be a source of patriotic inspiration to every one. This is your home institution, and we feel that you are one of us, no matter whether you left us last month or years ago. The University is not made up of classrooms and laboratories, but of living men and women, and most important of all—young people.

Those who come in the future will honor those who insured their liberty. They will eagerly read the letters from those who do things. They will find the most interesting pages of history in these letters because written by their schoolmates. The student of the future day will be very much the same as you. He will go to the old bench for a smoke between classes; he will be found "queening" on the campus with your younger sister, or daughter, or may be with the girl you left behind you at the particular time when the mathematical "Prof" thinks he ought to be studying; or he will be found "southward bound" to general assembly; or he will be running for president of his class; but one thing is certain, he will appreciate the file of letters from the boys at the front. So, "put these over the top" and we will do our bit for you. Just write any old way, so it shows the things that interest you. Theses and formal essays will not be accepted as we want personal letters depicting the things that interest you. These letters will be kept on the hill but will not be graded by the Hills, nor filed in musty holes.

The University has appointed a committee to look after various war activities. Major John P. Ryan, Commandant, the Chairman, has charge of the literary features of the program and will also compile a history of those in service. President Walter E. Clark and Comptroller Charles H. Gorman have charge of the executive and financial features of the work, and President Lewers will look after the publications which will consist of a bulletin issued once or twice a month, of a record of achievement to be issued so

ning the summary of the war work of the University. k will have charge of the war work carried on by the fessor R. C. Thompson will have charge of the general ousing a proper enthusiasm in emergency work; Dean charge of food production and conservation; Assistant have charge of courses of study in wireless telegraphy anical engineering tending to train war workers; and at all reading matter that he can lay hands on will find he front.

iversity has offered its services to the Federal Govern- ed men in blacksmithing, oxy-acetylene welding, wire- lectrical work during the summer months. It will be about 100 men at a time, and it is estimated that three ed in four months. The men would be quartered in ops would have to run about three shifts a day.

students in service the University of Nevada has joined y Union in Europe. The general object of the Union eds of American University and College men and their ope for military or other service in the cause of the e attained by establishing headquarters in Paris and and recreation facilities for the members. Rooms and y those sojourning in Paris and London at very moder- eadquarters are at the Royal Palace Hotel on the Place and the London ones at 16 Pall Mall, East S. W. 1. All ow belong to the Union, and you will find congenial com-

ssued once or twice a month as occasion demands, and et the correct addresses so that we may be able to reach

s and greetings from the University, we are

Yours sincerely,

THE WAR COUNCIL OF THE UNIVERSITY OF NEVADA.

was sent out March 27, 1918, and the third early

replies, a fair sample of many received :

JUST ACROSS FROM FRITZ, April 15, 1918.

Y OF NEVADA :

asure that I received the first bulletin containing your nd noted that one hundred and eighty-five of the old the Nation's call. I know that one and all we thank your support, and will each do our little bit toward the University that we learned to love so well. Not s star students, I will not try to write a formal essay, dea of an army engineer's part in the war, particularly ure you it is far different than the days we spent smok- or "queening" with some fair damsel when we should

we are quartered in shell-proof dugouts right under the drone of the flying missiles generally puts us to sleep. at them with twenty feet of earth, rocks, and logs above hen the shells and shrapnel begin to break among us 't quite so pleasant. What with balloons and airplanes eement we generally have a lively time of it. A moving e have obtained a wonderful picture of one of my parties hrew over about fifty 77mm. shells in the midst of us. tic stunts were sure pulled off and a hole full of water n empty one.

ainly of superintending the infantry in the erection of tion of trenches and dugouts. If we did all the work et very far, for everything is done on an enormous scale e engineers than infantry. We also look after the roads nt lines and do all the repairing necessary. We have no t of the men is wonderful and they meet every call made

upon them with that dogged determination to do their best, which a credit to their forefathers.

France is a wonderful country and the French are certainly a nation proud of. Some of their feats are beyond comparison and, in spite of years of fighting, they are undaunted and, as a whole, show a cheerfulness hardly to be expected.

I might suggest that you send each one of us a list of Nevada University students that are in France with their company and regiment, for it is very hard to be in touch with each other over here, and many of our old friends maintain contact with us without our knowing it.

I will drop a line or two as often as possible, and in return would like to know of the progress you are making and the doings on the home front. My best wishes for your success in helping Uncle Sam. I am

Sincerely yours,

LT. C. L. TIBBBS

Co. D, 117th Engrs., Amerforce.

P. S.—Lt. Percival has the same address.

The spirit that animates the University of Nevada in this war is most effectively expressed in Kipling's verses:

It ain't the guns nor armament
Nor funds that they can pay,
But the close cooperation
That makes them win the day.

It ain't the individuals
Nor the army as a whole,
But the everlastin' team-work
Of every bloomin' soul.

II. THE WAR COUNCIL AND REPORT OF UNIVERSITY MILITARY AFFAIRS

By JOHN P. RYAN,

Major U. S. Army, Commandant of Cadets, and Chairman of the
University War Council

a. The War Council.

To utilize the personnel and resources of the University in the prosecution of the war, the following committees, made up of members of the faculty and student body, have been organized:

1. Military Training.
2. War Courses.
3. Production and Conservation of Food Supplies.
4. Women's War Work.
5. Publicity and Propaganda.
6. Publications.
7. Literature for Soldiers.

The chairman of the several committees, united with the faculty of the University, constitute a war council which coordinates the work of the committees and considers all matters of importance in connection with the war activities of the University.

b. The Military Department.

Military training, under the direction of an officer of the army, has been a feature of instruction at the University of Nevada for more than thirty years.

Since October, 1916, there has been maintained at the Uni-

serve Officers' Training Corps, for the purpose of students for the duties of junior officers of the army. practical and theoretical for four hours each week, for all physically fit male students in first and second students may continue the training in the third receiving additional academic credit therefor.

the courses of instruction prescribed by the War ants expecting early call to service now have the ing short courses in military French, business and s of the army, radio telegraphy, and theory of the

me 65 graduates and former students of the Univer- commissions in the U. S. Army, and others are in Schools at cantonments throughout the country.

of the United States in the world war, more than male students enrolled have joined the colors, and vice flag measure in part the University's response to arms.

lion, though greatly reduced in numbers, continues on, and the cadets have participated in many civic patriotic purposes.

s been created to consider all matters relating to and the preparation of students for military service maintains a bureau of information for the benefit hers who wish to offer their services to the Govern- ers to place such persons in service to the best advan-

ar Department in obtaining qualified men or women ical work, the committee is now compiling a record practical experience, present occupation, and prefer- f the alumni, former students, and those now con- iversity.

is also collecting data for the preparation of a y Service" of University of Nevada men and women

vice are requested to furnish the committee with a iving date and place of entry into service, rank, ich assigned, duties, etc., and to supplement this with names of battles in which engaged, wounds ns conferred, or marks of honor received, etc.

iends of those in service can assist in this work by committee copies of letters, newspaper clippings, similar material relating to the war service of per- ly connected with the University of Nevada.

a reproduction of the war record blank referred to

UNIVERSITY OF NEVADA WAR RECORDS

AND RETURN TO ALUMNI SECRETARY, UNIVERSITY OF NEVADA.

War Records desires to collect and preserve a record of y every University of Nevada man and woman in the ho have studied in any department of the University, or of the teaching staff, and are enrolled in any form of

service, whether military or civil, are requested to fill out this sheet and return it to the Alumni Secretary of the University.

Name..... Class.....
 Permanent address—Street.....
 City..... State.....
 Branch of Service, Company, Regiment, Unit, etc., or name of Committee.....
 Date and place of entry into service.....
 Rank on entry into service.....
 Where stationed.....
 Promotions, decorations, etc.....
 Casualties..... Discharged.....
 If not in service at present, and available for government work on other lines, following information requested:
 Kinds of work best fitted for.....
 Academic training.....
 Practical experience.....
 Present occupation.....
 Remarks.....

III. WAR FINANCING AT THE UNIVERSITY

By C. H. GORMAN, Comptroller

Red Cross—

From September 1, 1917, to March 31, 1918, inclusive, subscriptions totalling \$297.53 were remitted to the State Treasurer, Ed. J. [unclear] from forty-six members of the University faculty.

Since April 1, parties of the University subscribing to the Red Cross make their remittances through the local treasurer, and at that time no remittances have been made through this office.

Every member on the University pay-roll signed a pledge of monthly payment to the Red Cross in the March-April drive. These pledges total \$2,000 a year, and are to continue for the duration of the war.

First Liberty Loan—

No subscriptions were made to the First Liberty Loan through the Comptroller's office.

Second Liberty Loan—

Two days before the Second Liberty Loan closed the Regent requested by the Comptroller to make arrangements whereby members of the faculty of the University who were not able to pay cash for bonds could subscribe through the Comptroller's office on the basis of ten equal monthly installments. Forty-four members of the faculty subscribed to a total of \$4,100 in this manner to the Second Liberty Loan.

Third Liberty Loan—

The same arrangement was made for the Third Liberty Loan. Forty-six members of the faculty subscribed for a total of \$5,500; to this was added a subscription of the David B. Russell Scholarship of \$2,500; making a total of \$8,000 to the Third Liberty Loan.

War Savings Stamps—

To date the students and members of the faculty have purchased through the Comptroller's office Thrift Stamps and War Savings Stamps amounting to \$977.75.

Student Friendship War Fund—

Through the Registrar's office 224 students pledged \$1,601.45, and 15 members of the faculty pledged \$1,363.50 to the Student Friendship War Fund, making a total of \$2,964.95.

American University Union in Europe—

On January 30 the University of Nevada took out a membership in the American University Union in Europe for the calendar year 1918. The general object of the Union shall be to meet the needs of the American University and College men and their friends who are in Europe for military or other service in the cause of the Allies.

**IV. REPORT OF THE COMMITTEE ON PUBLICITY AND PROPAGANDA
OF THE WAR COUNCIL OF THE UNIVERSITY OF NEVADA**

By R. C. THOMPSON,
Professor of Philosophy

The Committee on Publicity and Propaganda of the War Council was organized with Professor R. C. Thompson as chairman, Professors A. E. Hill and J. R. Young, Mr. Kimmel, and Miss MacMasters as members. The last two represented the students of the University.

The committee felt that its work was three-fold: First, the putting of student sentiment solidly and intelligently back of the war; second, publicity in connection with the various drives for war purposes; third, a wider campaign of education in the issues of the war. Its work, therefore, was organized along these lines.

Miss MacMasters served as secretary of the committee, and had charge of publicity work among the girls of the University and cartoon work in connection with drives. Mr. Kimmel, the editor of the University of Nevada Sagebrush, had charge of publicity through the medium of the college paper, and work among the men students. To Professor A. E. Hill was assigned the duty of securing articles from various members of the faculty and the mailing of these articles to the various papers of the State. Professors Young and Thompson took charge of the speaking campaign; the latter also had charge of publicity in the local papers in connection with the various special drives.

In the execution of the program outlined above, the following work was accomplished: Several interesting meetings were held in Manzanita and Lincoln Halls in which the issues of the war were discussed both by student and faculty speakers. The drive for War Savings was 100 per cent effective. The committee believes it is not too much to say that the University of Nevada student body, faculty, and employees "came through" to a man.

Mr. Layman, Librarian of the University, was asked to secure 6,000 books for the use of soldiers in training camps. He secured more than 8,000. The Publicity Committee handled the advertising for that drive.

Professor Hill secured the following articles on the issues of the war. These had wide publicity in the newspapers of the State, in some instances obtaining front-page space:

- "Why America is in the War," President Clark.
- "How Our Government Provides for the Families of Its Soldiers and Sailors," Major Ryan.
- "Who Rules Germany?" Professor C. W. Spencer.
- "What Germany Wants," Professor J. E. Wier.

- "The Germans as the Chosen People," Professor R. C. Thompson.
- "How Germany Makes War," Vice-President Lewers.
- "Germany Guilty of Moral Treason to Humanity," Professor R. C. Thompson.
- "The Prussian Handcuffs," Dean Geo. F. James.

A series of addresses in the Sparks and Reno schools was arranged for with the cooperation of Superintendents Meeker of Sparks and Billingshurst of Reno. The following series was given in the high schools of these cities:

- "Economic Causes of the War," Professor R. Adams.
- "Psychological Causes of the War," Professor J. R. Young.
- "German Education and the War," Dean G. F. James.
- "Who Rules Germany?" Professor C. W. Spencer.
- "The Perils of Prussianism," President W. E. Clark.
- "Women and the War," Dean Margaret Mack.
- "War Poetry," Professor A. E. Hill.
- "Medicine and the War," Professor Peter Frandsen.
- "Farmers and the War," Professor C. S. Knight.
- "School Athletics and the War," Coach R. M. Whisman.
- "Democracy and the War," Professor R. C. Thompson.

The following series to seventh- and eighth-grade students was given in the graded schools of Reno:

- "The Men in the Trenches," Professor J. R. Young.
- "Boys and Girls in the World War," Mr. F. W. Traner.
- "War Poetry," Professor A. E. Turner.
- "How Germany Makes War," Professor G. F. James.
- "Democracy and the War," Professor R. C. Thompson.

In addition to these addresses President Clark and Professors Spencer and Thompson of the speaking staff of the Committee on Publicity and Propaganda, spoke in outlying cities for the Liberty Loan, Red Cross, and other war objects. President Clark in particular, who is a member of the State Council of Defense, has been used constantly in the work of war publicity and organization, and his activities have taken him into every section of the State.

To state results from the work of this committee is very difficult. However, the following definite statements from Superintendents Billingshurst and Meeker may be cited.

Mr. Billingshurst says: "We feel that the lectures given in the Reno schools have been very helpful; they have given definite information about the war, and led to intelligent activity in war work. They have also aided us in complying with the state law which requires the giving of patriotic addresses in the public schools."

In answer to a request for a statement of the value of the course in the Sparks schools, Mr. Meeker writes thus: "I asked that each student in the English classes write two sentences in appreciation of the series of addresses on war topics. I then endeavored to make a brief composite, which I enclosed with this note: 'Greatly as we value the services which you and your fellows have rendered, I feel that the boy or girl should speak each for himself, if you are to judge of the worth of the series.' The 'composite' reads thus: 'These lectures have helped me to understand why German ideals are destructive, to know why the fight against them is on, to come into more immediate touch with the conditions surrounding the world war, to see more clearly things hard to understand about it from the printed accounts, and keenly to realize what losing to the Hun must mean. They have made the struggle vivid, so that sometimes it seems as

t in it, and they have made me glad that I am an
in this crisis I have a pair of hands with which to

V. LINCOLN HALL

By A. E. TURNER,
Assistant Professor of Public Speaking

Lincoln Hall during the last school year responded
demands of the war. When asked to subscribe to the
Fund they came forward with approximately
Liberty Loan drive they invested \$50 in a Liberty
Thrift Stamp campaign not a man failed to pur-
Thrift Stamps, some buying one or more of the
ates. Further, the men have pledged themselves to



Girls' Tractor Class

their summer's earning and with it continue their
ernment Thrift Stamps.

WORK OF THE UNIVERSITY WOMEN

MARGARET E. MACK, Dean of Women

students living in Manzanita Hall organized as an
no Red Cross Chapter for the purpose of making
t goods. Miss Kate Stroud was elected chairman
organization, and one of the parlors was equipped
en students living outside of Manzanita cooperated
, and at times the room was so crowded that it
e a second room with additional tables. All com-
ted and delivered to the Reno Chapter by Mrs.
ted 19,993 compresses up to April 25.

REPORT ON KNIT GARMENTS

First Semester—Approximate Number:	Second Semester—Actual Number:
Sweaters, 10.	Sweaters, 20.
Scarfs, 15.	Scarfs, 15.
Helmets, 8.	Helmets, 11.
Total garments, 79.	

In addition to the above, various groups and individuals did much work of which I have no record.

The Women's League sent each University man in service a box of Christmas cheer.

A number of girls took tractor and other instruction in order to be of service during the summer months. Several girls are now actively engaged in supervision of garden work, while others are prepared and ready to assist in Red Cross activities in different parts of the State.

The Women's War Committee of the University War Council organized and were instrumental in interesting the teachers of Reno and Sparks in the War Emergency courses given by the University. This committee also obtained from the Alumnæ much information regarding their activities throughout the State. Under the direction of this committee the students kept the University Service Flag up to date.

VII. READING MATTER FOR SOLDIERS

By J. D. LAYMAN, Librarian

On the 15th of last February the Committee on Reading Matter for Soldiers had its first meeting and voted a monthly contribution of 50 cents each for furthering our work. We agreed at once to take part in the national campaign for books during the week of March 18-25. To make it a state affair, the librarian of Reno and a full dozen of the principals of county and district high schools cooperated in an attempt to raise 6,000 books by donation, an average of 2 for each enlisted man from Nevada. Of course we had the enthusiastic support of the teachers and children. The result of the campaign by localities and principals is shown in this table:

Dayton—W. W. Anderson.....	100
Ely—S. D. Erwine.....	400
Eureka—Charles Priest.....	306
Fallon—J. R. McKillop.....	622
Goldfield—W. H. Weslar.....	1,451
Hawthorne—M. J. Burr.....	200
Las Vegas—I. W. Barnett.....	100
Panaca—J. R. Smith.....	471
Reno—A. R. Mack.....	3,693
Tonopah—G. L. Dilworth.....	1,237
Virginia City—G. A. Morgan, Jr.....	350
Yerington—B. G. Bleasdale.....	175
	<hr/> 9,105

As yet no replies have come in from nine more high-school communities. They will help in the future. Just now we must give our whole attention to cataloging these on hand here and at the Reno Public Library, and to forwarding them to the soldiers and sailors. One thousand are already boxed and addressed to Camp Fremont, Cal.

Another half-thousand are listed for Kelley Field, Texas, and we await a reply telling us whether to send them or not.

Committee members.....	\$21.00
Camp Fremont Library.....	\$15.00
Donor.....	4.00
More donation to Camp Fremont Library.....	1.02
	.98
	<hr/> \$21.00

paid collect freight to Reno amounting to \$74.04. Afterward sent me checks amounting to \$15.06 to pay donations. This is greatly appreciated.

VIII. SPECIAL WAR COURSES

By STANLEY G. PALMER,

Professor of Mechanical and Electrical Engineering

of several engineering students who were about to enter service, a special course was given in Military Engineering in January, 1918. Ten men took up this work, six of whom had already enlisted in the aviation branch of the army, and four were called to service. The subjects in which instruction was given were selected with the purpose in view of giving preparation for service. The subjects would probably be taken up in the aviation ground school as follows: Theory of Wireless Telegraphy, Airplane Engines, and Radio Buzzer Practise. They were given by Dr. Hartman, Professor of Physics, Dr. Haseman, Professor of Electrical Engineering, Assistant Professor Palmer of the Electrical Engineering Department, and Mr. Henry, Electrical Engineer for the Nevada Electric and Water Company. The students taking this course were: E. E. Moody, Weede, Rhodes, Chas. Gooding, J. E. Fairchild, Bartlett, and Savage. Of these, the first three are now ready in Government service.

WORK OF THE METALLURGY DEPARTMENT

By WALTER S. PALMER,

Professor of Metallurgy

The Department of the Mackay School of Mines, in as much service as possible in war work, has been engaged on the manganese problem. This problem was decided upon in conference with the officials of the United States Bureau of Mines. The best possible line of work for us to carry out at the present time is also to be done on oil shales, but the main work will be conducted by the Chemistry Department.

Manganese is an essential constituent of good steel, and good steel is in great demand at the present time. In the past the demand in this country has been almost wholly supplied by importing manganese ore or importing a ferro-manganese alloy from Europe. In the future, which have been used for this purpose, to take up the manganese to Europe. We are endeavoring to stimulate interest in and developing sources of manganese in this country. Nevada has been able to supply a considerable amount of manganese with very good prospects of considerably increasing production.

Worked on this problem early in January. Two short

press bulletins were prepared and sent out to all of the papers of the State. These were issued for the purpose of stimulating work along the line of prospecting for manganese. They were published in the papers of this State as well as in several Utah and California papers. Later a short bulletin on Manganese was prepared and copies have been distributed throughout the State to all who are interested in the subject. Many copies have been sent on request to parties outside the State. A copy of this bulletin will be sent to any one who desires it.

As a result of this work we have received from the first of January up to the middle of May, 166 samples from all parts of the State. On these samples 567 determinations and tests have been made. Most of these samples represent very good marketable ore. Many samples represent medium-grade ore which will require further concentration, along the lines of concentration, in an endeavor to produce a marketable grade of ore. Tests are to be conducted by the department along these lines.

The need for field examinations of the deposits, from which the samples have been received, as a necessary part of the work, was early recognized and also cooperation with other Departments and Bureaus. Cooperative agreements have been made between the United States Bureau of Mines and the University. Through the help of the Bureau of Mines we are soon to undertake extensive field work in this State on the manganese deposits and oil shales. The field examinations will be conducted by Professor J. C. Jones of the Geology Department and Professor Walter S. Palmer of the Metallurgy Department.

Later in the summer experiments are to be conducted on the high-grade ores of this State at the Mackay School of Mines. These experiments will be conducted by the Metallurgy Department cooperating with the Lake Superior Station of the Bureau of Mines at Minneapolis.

X. NEVADA'S WAR COLLEGE OF AGRICULTURE

By C. S. KNIGHT,

Dean of the College of Agriculture

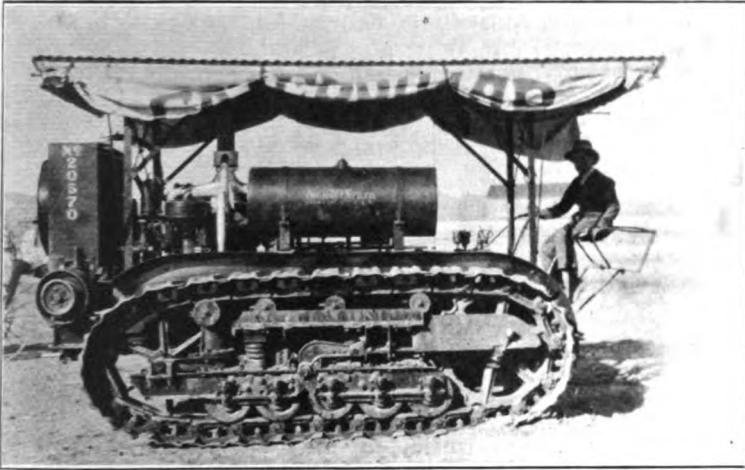
Since the United States entered the present struggle for liberty, our College of Agriculture has undergone a remarkable change in all of its operations. Of the sixty young men actively enrolled in this college, over 80 per cent have withdrawn to enter the various branches of service for their country.

During no time in the history of this country has the demand for men so great for young men trained along agricultural lines, as now. Even those with considerable agricultural experience. The College of Agriculture realizes the great necessity in the continuation of this work so that it may most effectively take its part in solving the most serious problems involved in the maximum production of war food. The College of Agriculture is giving more consideration in all of its work of study to the practical application of the various agricultural principles which have to do primarily with the modern methods of agriculture and practise.

When the University of Nevada offered its entire services to the Federal Government during the period of the war, the College of Agriculture gave the gravest and most practical consideration to the problems of increasing and conserving food products. During

year a most effective service was rendered for the benefit of agriculture in Nevada with the remarkable results that the State surpassed all previous records by a general increase in the total production of the foodstuffs which have such an important bearing on our success in the present war.

In this important movement the College of Agriculture has had for its object more farmers and better farming, and to this end has served the agricultural interests of Nevada in many ways.



High School Boy Running Caterpillar



High School Boys

Better cooperation has been secured between the farmers and the people of the rural districts and the College of Agriculture. By uniting these forces many difficult problems were readily solved with but little trouble, and the result was a more general and neighborly spirit of cooperation among the people in the various communities.

The University of Nevada made urgent requests to the people of the

State to use all possible waste land where water could be obtained with the proper irrigation of the same. In many instances, the lands were carefully examined, soil samples were taken and analyzed, and a plan of operation outlined for the quickest and most effective method of preparing this land for crop production. Several hundred acres of new land were successfully cropped during the past year by means of this special service.

The producing power of irrigated lands has been increased and this was brought about chiefly by the use of better methods of farming and fertilization. The College of Agriculture helped the farmer to obtain more general knowledge of the value of his land for crop production, to select crops best suited to a particular soil, and the highest producing varieties of these crops. Many samples of farm seeds were received from farmers throughout the State and tested for germination and vigor. The reports of these tests were submitted to the farmers and in many instances prevented the waste of land and labor on a partial failure of crops, or the cultivation of a crop badly infested with weeds.

The College of Agriculture has had a very heavy correspondence with the farmers of Nevada during the past year. In every instance where information has been furnished by return mail on the preparation of land for different kinds of crops, methods of seeding, irrigation, and harvesting for the best results. Assistance has also been given to farmers in finding a suitable market for their products.

More efficient use of farm labor has been secured. During the past year the University of Nevada in cooperation with the Federal Government established an organization for more effectively coping with the farm-labor situation. A labor specialist was employed throughout the summer to carry out the plans of this organization. The plan provided for the appointment in each of the agricultural towns of a man who would act as labor distributor, to whom labor could be secured by the farmers and others go for farm labor. These men were appointed by large posters used to advertise this special service. Although the plan did not provide for a guarantee of labor, it did, however, result in the distribution of labor from places with a surplus to places experiencing a labor shortage. The plan was successful in directing men to localities where labor was needed, thus resulting in a more efficient use of the laborers in the State.

More than 100 boys and girls enrolled for the special Farm War Short Course given by the College of Agriculture during the month of April, 1918. This training involved actual field work in practically every branch of farm work practised in the State. Special training was given to these boys and girls in the construction and operation of farm tractors. Seven different makes of tractors were used. The students not only learned how to operate each tractor properly, but also made a careful study of the working parts of each machine so that they could readily adjust any ordinary trouble that might occur. The field work involved the handling of horses, the use of different tillage implements, planting and irrigation of various crops, and the feeding and general care of the different kinds of stock.

At the completion of the course the students who did not graduate from the high schools of the State to complete their regular studies, were permitted to work on the farms and ranches of the State. About 60 boys

ms by the first of May, 25 of whom were located on Antelope Land and Cattle Company, with Professor University in charge of the camp. These boys are service and like the work.

d from one of the girls registered in this course who ment on a ranch stated that she was experiencing no operating of a Case Tractor in the preparation of land spring crops; and that she preferred this type of



Explaining the Operation of a Tractor to High-School Boy



ys Soon Learn to Operate Farm Machinery

ar duties of the household. The remaining students farms at the completion of their school year.

al use of foods in the home has been obtained. The te are called upon to give every possible assistance in d products, and are being confronted with some very . Our College of Agriculture, through the School of is training the young women of Nevada to cope most

successfully with this situation. During the past school year Course on Food Conservation was given for one semester and Cross Course for both semesters. Professor Millicent L. Seapared a book of recipes on War Foods which was published Nevada Association of Collegiate Alumnae. Five hundred copies pamphlet were sold at 10 cents each and the proceeds used to Belgian baby one year. Professor Sears also gave six demonstrations on various combinations of war food substitutes to a class of members of the Association of Collegiate Alumnae, the object being to train these women to repeat the lessons to their neighbors.

The week of January 21-26, 1918, was devoted to war conferences of the farmers and those interested in farming, and the women of Nevada. The meetings were confined chiefly to the consideration of those problems having an important bearing on the production and conservation of foods. Several hundred people of Nevada attended these conferences with the result that the acreage of farm crops greatly increased this spring, and that better methods are generally practised in the use and conservation of war foods. These conferences were held by the College of Agriculture and the Agricultural Extension Division, University of Nevada.

With the new Agricultural Building, a better service will be afforded to the young men and women of the State, due to the modern equipment for carrying on the work in the classroom and laboratory. The new agricultural home will also serve as a center where the farmers and women of the State will meet at various intervals to consider the important problems of the rural districts. This building is the property of the different agricultural departments and is used for giving instruction to the regular four-year students in Agriculture and Economics, the Farmers' and Housekeepers' Short Course students, and also the men and women of the State in attendance at the Farmers' and Homemakers' Week.

XI. THE AGRICULTURAL EXPERIMENT STATION AND THE

By S. B. DOTEN,

Director of the Agricultural Experiment Station

The Nevada Agricultural Experiment Station has adapted its program to war conditions in the course of the past fiscal year. Work made inactive all the projects which could be set aside in favor of new lines of work which will have a more direct effect upon the production of food.

Among the new lines of work begun in this year which will be most useful in the near future are the following:

(1) Feeding tests with poisonous plants to determine how much of each is required to kill an animal, the season when the plant is most poisonous, and the condition of the animal in which fatal poisoning is most apt to occur.

(2) A study of methods of producing hay along the Humboldt River in Nevada with a view to increasing the yield and improving the quality. This is to be a cooperative study in which the Bureau of Public Roads and the Nevada Experiment Station will share.

(3) Methods of increasing the percentage of lambs in Nevada

study of winter-feeding of ewes, and of lambing
a study of means of saving stray lambs.

war the Station will concentrate its efforts on a few
a few problems. We are planning to study how to
water supply go as far as possible in crop produc-
reduce the losses from poisonous plants and animal
ly, how to handle the ranges in Nevada in such a
a larger number of better animals.

inues and there is need, we shall concentrate all the
on on a very few vital problems, subordinating the
nization and reducing the number of projects in
ave a direct and immediate effect upon animal pro-
conditions.

nger men of the Station who have enlisted or have
colors are John Blair Menardi and Gardener Chism
of Agronomy, and Rufus Ogilvie, Assistant in the
tomology.

ht, who is the head of the Department of Agronomy
Chairman of the Food Resource Committee and S. B.
y. Both men are members of the State Council of

ak of the war the Station has published eight popu-
g information of value to farmers on the planting
he principal field crops grown in this section. Two
n press. One covers the subject of poisonous plants
for sheep and cattle. It is to be printed in both
sh and is to contain six colored plates and numerous
other bulletin deals with methods of handling sheep
way which will diminish the injury done by tramp-
ng while increasing the production of both mutton

WORK OF THE AGRICULTURAL EXTENSION DIVISION

By C. A. NORCROSS.

Director of the Agricultural Extension Division

Emergency Agricultural Appropriation bill, approved
the United States Department of Agriculture was
ate the production of all farm crops needful in the
, to assist in the distribution thereof and to cooper-
ederal and state agencies in food conservation. The
on to the Agricultural Extension Divisions of the
their ordinary funds available for Extension work
used for the employment of additional specialists for
l county work.

Divisions were advised to plan their work on the sup-
ar would last at least three years; that while every
ade to stimulate production during the first year, an
be completed in each State as rapidly as may be for
cy in handling the different lines of work required
provisions of the bill.

competent men and women for such service in all

the States has been greater than the supply. It has resulted in extreme difficulty in finding suitable men and women for such positions but has taxed the efforts of all Extension directors to coordinate their activities in such short time and train them in the required.

This has been especially true in Nevada. With the exception of Lockett and Mr. Scott, every one in the Extension Service came upon his duties since the declaration of war, and in all instances with no previous training.

We have at this date county agricultural agents in Washoe, Elko, Douglas, Churchill, Clark, and Lyon Counties, and demonstration and county club leaders in Washoe, Humboldt, Churchill, Douglas, Clark, Lyon, and Lincoln Counties. In addition we have state leaders and assistant state leaders to supervise and coordinate their work. There is also a Farm Labor Specialist employed by the Department of Agriculture, but under direction of the Extension Service, who will assist in the distribution of farm labor throughout the State. At the close of the present fiscal year the number of permanent and temporary employees in the Extension Division will approach forty persons.

This organization has been perfected, for the most part, since January 16, 1917; the work has been substantially coordinated with the purposes of the Act of Congress, and individual progress in efficiency throughout the whole, is gratifying.

The work as prescribed, comprises a County Agricultural Agent for each agricultural county, with a local office in the county and means of transportation. His duties are to study the ways and means of increasing the acreage in crops needful in the war; to try to improve farming and livestock methods; to assist in the procuring of goods and to help in the marketing of such agricultural products. His work further, is to organize the farmers of his county wherever practical under the Farm Bureau plan in order that the agricultural interests of such county may be benefited and stimulated by the force of community enterprise and spirit.

The work of home demonstrators, from the purely Extension point of view, is to promote the domestic efficiency, comfort and happiness of farm women. From the war emergency standpoint it comprises the teaching of both rural and urban women the methods of making foods and the conservation of all food from waste.

The work of the club demonstrators is to marshal the industry of boys and girls in the production and conservation of food.

Within the last ten months our home demonstrators have conducted demonstrations of the methods of making the war foods in every town and hamlet in this State, with few exceptions. They have carried the message of Hoover and taught the ways in which it is done to a very large portion of the people of this State.

The Boys and Girls Club workers have organized and enlisted between 3,000 and 4,000 boys and girls in Nevada in the growing war gardens, the raising of pigs, sheep, baby beef, poultry, and rabbits and the canning and drying of surplus fruits and vegetables. They have provided volunteer local supervisors and local leaders to visit, instruct, and keep up the interest of these juvenile workers in the use of the literature, forms, blanks, and reports for each kind of ju

been prepared by the Extension Division, and the of every club member is kept in the Extension office. s in their respective counties, relative to the time rvice, have been factors in stimulating the produc- Lyon County has been completely organized with ve Farm Bureau of which nearly 60 per cent of the ty are members. Partial organizations have been and Elko Counties. In every county in which we t there is a growing sentiment among farmers as rvice. His office is not only a place where techni- ormation may be obtained, but in his visits to the ore and more a distributor of information and a armer. Our county agents within the short period e helped farmers in securing better live stock, have ale of farm products, and have persuaded them to and better methods of crop and soil management. is year it will be impossible to present in any con- vement of our county agents. Even then much of e heaven for future progress, to show ip succeeding e present.

Administrative Staff, in cooperation with the special- of Agriculture, has held meetings with farmers, women in nearly all parts of the State; conducted emakers' Institutes in a number of counties, and me of correspondence from people in all parts of e past year over 100,000 pieces of literature have m headquarters.

urvey of the State was taken in March, coopera- ic schools of the State, the tabulations of which will ecked with all other sources of information within

orkers have cooperated with the Food Administra- e sale of Liberty Bonds, and helped in Red Cross

UNIVERSITY OF NEVADA SERVICE ROSTER

UNIVERSITY FACULTY MEMBERS IN WAR SERVICE

ing Dean of the College of Engineering and Professor of In temporary service in Explosive Plant Construction. ala.

stant Professor of Agricultural Chemistry and Commis- food and Drugs Inspection. 1st Lieutenant. Sanitary

atron, Manzanita Hall. In Y. M. C. A. Hostess House.

t Professor of Botany and Horticulture. With Labora- koff," Fort Sam Houston, Texas.

Leader, Extension Division. Private.

structor in Mechanical Engineering. Lieutenant (J. G.)

ve Forces, U. S. S. Frederick.

Assistant in Agronomy, Experiment Station. Ensign, U. S. den Gate.

structor in Home Economics. In Y. M. C. A. Hostess ston.

tor in Chemistry. Private. Engineers, A. E. F.

Assistant Professor of Mechanical Engineering. Ensign.

J. G. Scrugham, Dean of the College of Engineering and Professor of Mechanical and Electrical Engineering. Major, Production Division, Ordnance Department, Washington, D. C.
 Charles W. Spencer, Professor of Political Science. Y. M. C. A. Secretary, Paris, France.
 Carl Vinson, County Agent, Extension Division. 2d Lieutenant, Infantry.

UNIVERSITY OF NEVADA STUDENTS AND ALUMNI IN WAR SERVICE

The following is a tentative list of names of students and alumni of the University of Nevada who have gone into United States military service. Although considerable effort has been made to learn the names of all students and alumni who are in the service, the list is not complete nor are all the data correct as to branch of service. It is desired that the list be as complete and correct as possible, and the University is asking that additions or corrections be sent by relatives, friends, newspaper men, or general readers to the President's office. In reporting information give in addition to the name, the rank and branch of service, together with any other information which would be of interest and value for such a list.

A star preceding the name indicates that the man has lost his life in the service:

David D. Abel, Private, Machine Gun Battalion.	W. Lee Bunnell, Private, Engineers.
Paul Adams, Private, Infantry.	Edward Burg, Corporal, Engineers.
Wayne B. Adams, 2d Lieutenant, Infantry.	James Burke, Lieutenant, Aviation.
Andrew J. Aikens, 2d Lieutenant, Infantry.	Frederick Cafferata, Private, Engineers.
Joseph Allen, Sergeant, Artillery.	Edgar P. Caffrey, 2d Lieutenant, Infantry.
Robert A. Allen, 1st Lieutenant, Ordnance.	C. Howard Candland, 2d Lieutenant, Artillery.
Leslie Allenby, Private, Artillery.	A. Lynne Candland, Private, Infantry.
Eugene H. Austin, Private, Draft Army, Camp Fremont.	Robert Carpenter, Private, Marines.
Lawrence Backes, Private, Engineers.	Frank A. Casey, Private, Marines.
Chester L. Bacon, Instructor, Harvard Radio School.	Mark E. Cessna, Private, Draft Army, Camp Fremont.
Charles K. Badger, 1st Lieutenant, Signal Corps.	Everett Cheney, Private, Infantry.
Gilbert Bailey, Private, Artillery.	Gardner L. Chism, 2d Lieutenant, Infantry.
William Banigan, Sergeant, Aviation.	Soren Christiansen, Private, Marines.
Neil Barber, Instructor, Gas Engines.	Justus Christopherson, Private, Infantry.
Paul Barker, 2d Lieutenant, Infantry.	Dan Coll, Private, Hospital Unit.
Horace Barton, Private, Wireless.	John G. Collins, 2d Lieutenant, Engineers.
Cedric Beebe, Chemical Service Corps.	Alexander Cotter, Private, Aviation.
Harold C. Block, 2d Lieutenant, Aviation.	Sheldon Crawford, Private, Aviation.
Kenneth Booth, Captain, Infantry.	Basil Crowley, 2d Lieutenant, Infantry.
Felix Borzynski, 2d Lieutenant, Aviation.	Arthur Cunningham, Sergeant, Artillery.
Edgar Allen Brown, Private, Artillery.	James Curtin (?)
Ralph W. Brown, Private, Marines.	James Cusick, Private, Aviation.
Rolf Brown, Private, Artillery.	B. Dade Davis, Lieutenant, Infantry.
Howard E. Browne, Private, Draft Army, Camp Fremont.	Harry Davis, Private, Specialists' School.
Dean Bryant, Sergeant, Aviation.	Lavoy Davis, Private, Hand Grenade Division.
Floyd Bryant, 2d Lieutenant, Infantry.	Oscar C. Davis, Cadet, R. O. T. C.
William Bryant, Private, Infantry.	Stanley Davis, Private, Engineers.
Albert Buckingham, Private, Navy.	William S. Davis, Private, Aviation.
Thomas Buckman, Signal Corps, Radio Division.	Harry C. Day, Officers' School, Navy.
	Perl Decker, Private, Aviation.

Private, C. A., C.	John W. Heard, 2d Lieutenant, Artillery.
ps, Private, Aviation.	George Henningsen, Private, Naval Aviation.
ain, Artillery.	Albert M. Henry, Private, Aviation.
et, R. O. T. C.	Harlan Heward, 1st Lieutenant, Infantry.
et, R. O. T. C.	Winfield C. Higgins, Corporal, Infantry.
Engineers.	Charles Rhoads Hilton, 2d Lieutenant, Signal Corps.
Private, Harvard	Wilmer O. Hinkley, Ensign, Navy.
1st Lieutenant, Ar-	Frank Hobbins, 1st Lieutenant, Infantry.
enant, Engineers.	Thomas R. Hobbins, Private, Signal Corps.
te, Medical Corps.	Samuel J. Hodgkinson, Corporal, Infantry.
Lieutenant, Artill-	Francis W. Hodgkinson, Sergeant, Infantry.
pe, Second Train-	William T. Holcomb, Private, Engineers.
University.	Benjamin Dean Holt, Private, Naval Aerial Reserves.
ate, Field Ambu-	Earl Holtham, Naval Reserves.
Forces.	F. Paul Hornaday, Private, Marines.
N. A. R. C.	Edward L. Houchins, Private, Infantry.
Lieutenant, Avia-	Harry Hovey, Cadet, R. O. T. C.
l Radio School.	Alfred Inman, Corporal, Signal Corps.
enant, Infantry.	Albert M. Jackson, Captain, Coast Artillery.
ysician, Base Hos-	Melvin C. Jepson, 1st Lieutenant, Engineers.
ate, Aviation.	Walter Jepson, Ambulance Service, France.
, Aviation.	Lester C. Jones, Private, Aviation.
).	Carl D. Kemper, Sergeant, Tank Corps.
ate, Infantry.	Ira L. Kent, Private, Infantry.
ivate, Engineers.	Thos. R. King, 1st Lieutenant, Engineers.
enant, Aviation.	Elmer W. Knight, Private, Hospital Unit.
e, Wireless Tele-	John L. Knight, Private, 13th Co., 161 Depot Brigade, Camp Grant, Ill.
oral, Artillery.	Grover Krick, Yeoman, Naval Reserves.
, Medical Depart-	Simon Krummes, Private, Artillery.
ate, Motor Cycle	Everett S. Layman, 2d Lieutenant, Infantry.
Cadet, Aviation	Harold L. Layman, Private, Engineers.
Private, Infantry,	Lawrence E. Layman, Private, Engineers.
ng, Private, Avia-	Oliver W. Layman, Private, Engineers.
neers.	Clive Leap, Private, Medical Corps.
nd, 2d Lieutenant,	Stephen G. Lefner, Private, Infantry.
Lieutenant, Artill-	Harold Louderback, Captain, Coast Artillery.
, Sergeant, Engi-	Joseph D. Lowrie, Officers Class, Navy.
n, Private, Infan-	John D. Luce, Private, Signal Corps.
t, Aviation School.	Photo Division.
Private, Infantry.	Ward W. Lusk, 2d Lieutenant, Ordnance.
Private, Marines.	Joseph D. Lynch, Private, Quartermaster Corps.
, First Training	Bonnifield McBride, Captain, Ordnance Reserve Corps.
iversity.	
, 2d Lieutenant,	
Lieutenant, Engi-	
ate, Engineers.	
te, Engineers.	

G. L. McCreery, 2d Lieutenant, Infantry.
 E. Lloyd McCubbin, 2d Lieutenant, Aviation.
 Bernard McDonald (?).
 Clyde S. McKenzie, Private, Engineers.
 John McLaughlin, Sergeant, Quartermaster Corps.
 R. Bruce McPherson, Instructor, U. S. Aeronautic School.
 H. T. McQuiston, Cadet, R. O. T. C.
 Joseph Page Mack, 2d Lieutenant, Engineers.
 Leon A. Mack, Corporal, Coast Artillery.
 Mackay A. Mackenzie, Cadet, Aviation School.
 George W. Malone, 2d Lieutenant, Artillery.
 Francis Martin, Sergeant, Aviation.
 Clinton Melarkey, Private, Specialists' School.
 William Melarkey, 2d Lieutenant, Infantry.
 Simon Merenbach, Private, Infantry.
 Louie Meyer, 2d Lieutenant, Artillery.
 Charles J. Miller, Private, Infantry.
 Lester L. Moody, Private, Balloon Section.
 Harry G. Moore, 2d Lieutenant, Infantry.
 James E. Moore, 1st Lieutenant, Infantry.
 Franklin Morrison, Private, Ordnance.
 Chester Morrow, Private, Infantry.
 John V. Mueller, 2d Lieutenant, Infantry.
 Edwin E. Murray, Private, Aviation.
 Edward J. Neasham, Private, Artillery.
 Carl T. Noblitt, Private, Infantry.
 Edward G. North, Private, Infantry.
 Orren G. Oden, Private, Aviation.
 John O'Dowda, Lieutenant, Aviation.
 Rufus Ogilvie, 2d Lieutenant, Div. G., S. A. S., Section 64.
 Roscoe C. Olds, Private, Engineers.
 James O'Leary, Private, Clerical Company.
 Vernon C. Organ, 2d Lieutenant, Infantry.
 John L. O'Rourke, Private, Naval Reserves.
 George Overstrom, Private, Engineers.
 Stanley M. Pargellis, Private, Artillery.
 R. Moorman Parks, Private, R. O. T. C.
 Chester A. Paterson, Private, Infantry.
 Lloyd B. Patrick, Captain, Tank Service.
 Harvey Payne, Private, R. O. T. C.
 Edgar Ford Pearson, Captain, Engineers.
 William Pennell, Private, Engineers.
 Frederick Percival, 1st Lieutenant, Engineers.
 Frank L. Peterson, Captain, Ordnance R. C.

Robert M. Pierce, 1st Sergeant, Infantry.
 William F. Piggott, 2d Lieutenant, Infantry.
 C. Elrod Pohl, Ensign, Navy.
 William M. Powers, Private.
 Dale Pruett, Sergeant, Aviation.
 A. J. Quigley, Private, Ordnance Defense.
 Hugh Rains, 2d Lieutenant, Infantry.
 Philip Raymond, 2d Lieutenant, Engineers.
 Albert J. Reed, Private, Artillery.
 Edward Reed, Private, Aviation.
 Henry Rhodes, Cadet, Aviation.
 James W. Rice, 1st Lieutenant.
 R. R. Richardson, Private, Infantry.
 George Roberson, Cadet, Aviation.
 L. N. Roberts, Private, Infantry.
 Warren C. Robinson, Private, Infantry School, Navy.
 Earl Talmage Ross, Sergeant, Quartermaster Corps.
 Virgil Roulland, Private, Machine Battalion.
 Ellis Roundtree, Private, Marine.
 R. Clarence Sather, Cadet, Aviation School.
 Lee S. Scott, Engineers.
 Robert Scoular, Electrical School.
 Charles Seitz, Private, Aviation.
 Lisle J. Selby, 2d Lieutenant.
 William Settlemyer, 2d Lieutenant, Engineers.
 William Shearer, Officers Class.
 Richard Sheehy, Private, Signal.
 Harry Sheeline, Private, Infantry.
 H. Norris Shindler, 2d Lieutenant, 316th M. P., Co. 3.
 Charles Short, Private, Aviation.
 Alson Shufelt, Physician, Quartermaster Corps.
 Gustav F. Sielaff, Captain, Engineers.
 Frank Silva, 2d Lieutenant, Aviation.
 Claude Smith, Private, Aviation.
 Emmet G. Smith, Private, Infantry.
 John W. Smith, Private, Artillery.
 Thomas M. Smithers, Lieutenant, Engineers.
 Ivan B. Snell, 2d Lieutenant.
 Raymond Spencer, Captain, Quartermaster Corps.
 Carl Springmeyer, Private, Infantry.
 George Springmeyer, Captain, Intelligence Division.
 Herbert Squires, Private (drafted), Aviation.
 Carl Stever, Engineers.
 Donald Stewart, Private, Hospital.
 Richard C. Stoddard, Major, Infantry.
 Edward Sullivan, Private, Aviation.
 John Sunderland, reported as missing, Aviation Forces.
 Vernon Summerfield, Aero Corps.
 Earl Swain, Ensign, Navy.

lieutenant, Aero Corps.	Ora Robert Weed, Cadet, Aviation School.
Marines.	
Infantry.	Claude Wheeler, Private, Infantry.
Physician, Hospital	John E. Whitmore, Corporal (?).
	William D. Whittet.
Lieutenant, Engl-	Charles D. Wilson, 2d Lieutenant, Infantry.
Physician, Hospital	Clay Willis, Private, Ordnance.
Private, Aviation.	John W. Williams, Corporal, Machine Gun Division.
Medical School, Navy.	Nathaniel D. Wilson, Student, Radio School.
Lieutenant, Engineers.	
2d Lieutenant,	Fred Winegar, 2d Lieutenant, Infantry.
	Carl Winslow, Sergeant, Infantry.
Lieutenant, Artillery.	*Walter B. Wise, Private, Infantry.
Lieutenant, Sig-	T. Lyster Withers, 2d Lieutenant, Coast Artillery.
Infantry.	Henry Wolfson, 1st Lieutenant, Statistical Division, France.
Radio Divi-	Earl Wooster, Sergeant, Engineers.
Lieutenant, Ma-	Francis M. Young, Private.
on.	

FORMER STUDENTS—WEST POINT OR ANNAPOLIS GRADUATES

SERVING IN THE REGULAR ARMY

Colonel, Engineers, N. A., American Exped. Force.
 Lieutenant-Colonel, N. A., American Exped. Force.
 Lieutenant, American Exped. Force.
 Coast Artillery, N. A., American Exped. Force.
 Lieutenant, Cavalry, American Exped. Force.
 Lieutenant-Colonel, N. A., Ordnance Branch, Washington.

PROGRAM

SERVICE FLAG EXERCISES

University of Nevada Gymnasium

Friday, January 11, 1918

11 a. m.

President WALTER E. CLARK Presiding

- I—Opening Song "America".....Led by Mr. L. J. M.
Miss Denny at the Piano
- II—Address.....Governor Emmet D.
- III—Salute to the Service Flag.....University Cadet Ba
- IV—Reading of the University Service Roster.....
Major J. P. Ryan, U. S. Army, Commandant of
- V—Closing Song "The Star-Spangled Banner".....
Solo by Mrs. Frank
- All join in the Refrain

*Governor Boyle was unavoidably delayed in reaching the
University and Lieutenant-Governor Maurice Sullivan and
Judge George S. Brown gave short talks in his stead.

THE FACULTY SCIENCE CLUB

Its War Program

By J. E. CHURCH, JR.,

Professor of the Classics

Science Club introduced an innovation the past year
outlook and stimulated deep interest at a time when
shing the student body and its own faculty mem-

onsisted of combining with its usual program of
ts a special program suggested by the war's activi-
service of science in solving war problems and the
a to science itself by the war.

s as varied as the divisions of science itself, and
owing topics:

phonograph and a Discussion of the Principles of Tone
Gabler of Edison Co.

he War," Dr. J. E. Church.

tricity Through Metals," J. L. Weatherwax.

he War," Professor J. C. Jones.

xplosives," Dean M. Adams.

hematics to the War," Dr. C. Haseman.

ess as Affected by the War," Director C. A. Norcross.

e Tax Laws," R. M. Price.

mospheric Nitrogen," Dr. G. W. Sears.

of Producing Potash and Nitrogen," Dr. C. A. Jacobson.

and the Great War," Professor F. W. Wilson.

Dr. S. Lockett.

Relation to Crop Production," Professor C. W. Lantz.

ar," Professor P. Frandsen.

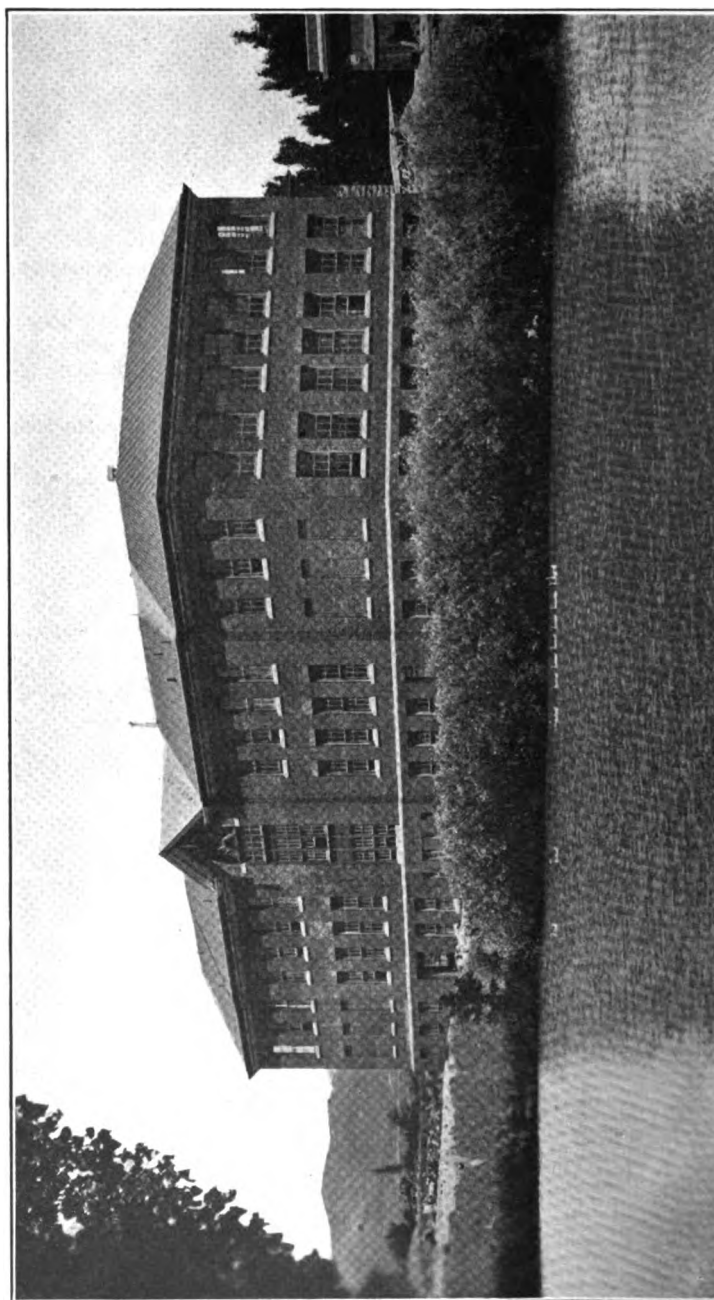
an Enduring Peace," Dr. R. Adams.

pecially on the engineering phases of the war, were
st of the Engineering Faculty had gone into war
eering secrets were being closely guarded. How-
is over and our members come home, these topics
will be presented with a vividness and a wealth of
ill make the past program tame indeed.

ts—particularly the boys in the trenches—a deeper
interest in the club, the question is now under dis-
ng an associate membership for students.

ked by the resignation from the University of Dr.
founder and leading spirit of the club and twice

directed the coming year by Dr. Haseman, Presi-
garet Mack, reelected Secretary.



THE NEW AGRICULTURAL BUILDING

By PETER FRANDSEN, Professor of Biology

With the completion of the new Agricultural Building in the early part of August, 1918, the University possesses two notable structures dedicated to the development of Nevada's two basic industries—Mining and Agriculture. The Mackay School of Mines was the first thoroughly modern and fully equipped building to be constructed, which was, in all particulars, adequately designed for a particular line of work, but the Agricultural Building is equally carefully planned and effectively constructed for its special purposes.

As mining was the first industry in Nevada, and agriculture a later development, so, in the history of the University of Nevada, the Mining School is the oldest and the College of Agriculture the youngest phase in its evolution. From a scattering attendance of two or three to a half-dozen students in the early years, the registration in the College of Agriculture has steadily increased until, in 1916, the total of those regularly enrolled, not counting the short courses or special farmers' courses, exceeded that of any other school except the College of Arts and Science. In the last year and a half about 80 per cent of the men enrolled have withdrawn to enter war service, but at the conclusion of the world war there is every reason to expect a constantly increasing enrollment, for the speeding up of crop production has brought about a closer cooperation between the farms of the State and the College.

The Agricultural Building is a three-story structure of brick with stone facings and trimmings, similar in general design to the Mackay School of Mines. It is larger than the latter, being 180 feet long by 58 feet deep, and is situated directly east of the University Lake, between the Chemistry Building and the Library. As the Mackay School of Mines fittingly faces the south and the Comstock from which the mining industry had its origin, so the Agricultural Building may be appropriately regarded as looking to the east, to the ranges and valleys with their potential wealth for unlimited future development.

The first floor includes the administration offices, the offices of the Extension Division, four classrooms, a large auditorium, and the millinery laboratory. The second floor is arranged for the School of Home Economics and the Department of Biology, and is provided with a sewing laboratory, cooking laboratory, model kitchen, and dining-room, offices, and the biological laboratories with accessory store and preparation rooms. The basement has laboratories and storerooms for agricultural engineering, animal husbandry, farm crops, soil physics, horticulture, and anatomy. The interior woodwork is of Oregon pine, finished in a pleasing old Mission olive. The building is fully equipped with modern plumbing, gas and electrical fixtures.

The main auditorium on the first floor is provided with a large demonstration table which has an attached gas range, and the seating is on the amphitheater plan to comfortably accommodate an audience of a hundred or more. This room is intended for general public lectures and demonstrations as well as a regular classroom.

The farm crops laboratory is well equipped with the necessary appa-

ratus for the judging and commercial grading of small grains and hay, also for the study of the milling qualities of wheat. It contains a study collection of samples of seed and matured plants of the different varieties of cereals and forage crops.

The soils laboratory is to be provided with four large chemical worktables, accommodating thirty students at a time, and has the necessary supplies and apparatus for all kinds of soil chemistry and physics.

The largest room in the building is the farm engineering laboratory, which will contain the latest models of farm machinery, irrigation appliances, and various other agricultural equipment so that a comprehensive study may be made of their application to agricultural problems in the West.

The animal husbandry laboratory contains some fifty cases of wool, representing the common breeds of sheep and the various market grades of fleeces. The laboratory will later be fitted with instruments and other equipment for the study of tensile strength, general composition, and scouring percentage of samples of wool. The animal records are effectively catalogued so as to be readily available for study in the classes in animal husbandry and genetics. A commodious fireproof vault in the basement provides a safe storage-room for documents and materials whose loss would be irreplaceable.

The biological department occupies part of the basement and the north half of the second floor. There are five laboratories consisting of the following: (1) The main laboratory, used for the elementary courses in botany, zoölogy and hygiene, which will accommodate about 35 students at a time; (2) The advanced zoological laboratory, accommodating 12 students for work in histology, embryology and bacteriology; (3) The advanced botanical laboratory with provisions for the same number of students in plant histology, physiology and pathology; (4) The plant-breeding and horticultural laboratory; and (5) The anatomy laboratory. The first three are located on the second floor and the last two are in the basement. In addition to these laboratories there are small rooms for storage, an ice-room, a photographic room, a fire-proof incubator room, and a small museum and exhibition room. In the basement there are arrangements for the keeping of running aquaria and supplies of living animals. In the central part of each laboratory are stationary tables provided with gas, water, sink and electrical connections, lockers and drawers—all adapted for the setting up of apparatus in physiological and other experimental work. Tables grouped in front of exceptionally large windows are well arranged for microscopic work. Each individual table is provided with a simple and compound microscope and has lockers and combination-lock drawers so that different classes may keep their individual supplies undisturbed by different occupants of the same desk. Neatly designed wall cabinets, reagent cases and lockers are used for storing general equipment and supplies. The department possesses fifty-five compound microscopes of which ten are provided with oil-immersion lenses and all the accessories needed for the most delicate and precise microscopical work. Among the larger pieces of equipment are two electric incubators, a Freas electric oven, paraffine water-bath, dry-air and steam sterilizers, an autoclav, centrifuge and a large model projection apparatus with a full equipment for microscopic, lantern-slide and opaque projection. Four complete sets of animal physiological apparatus will accommodate

eight students in experimental courses. Similar apparatus and a greenhouse make possible a fairly complete course in plant physiology.

The department of home economics occupies the south half of the second floor. The cooking laboratory is equipped with tables, arranged in the form of a hollow square, provided with four set-in white enamel sinks, and having gas plates for twelve students, with all the utensils for individual practise in cooking, and with full equipment for a large quantity of cooking and catering. Adjoining the cooking laboratory are two unit kitchens, furnished with gas ranges, sinks, tables, closets, and utensils for preparing family-sized recipes. There is a wood and coal range, and there will be an oil and electric stove in the laboratory, so that students may learn the use of all common fuels. Next to the unit kitchens is a dining-room suitably furnished for catering. The large built-in sideboards and sidewall lights make the room very attractive.

The sewing laboratory, well lighted by south and west windows and modern electric fixtures, is fitted with sewing- and drafting-tables and individual lockers for twenty students and has ironing boards, irons, and six sewing machines. Adjoining this room is a large garment-fitting room equipped with full-length triplicate mirrors and space for hanging of all garments in the process of making. The millinery laboratory, on the first floor, is equipped with low work-tables and individual lockers for twenty students, with a white enamel sink for dampening and shaping hat foundations and with a full equipment for steaming, renovating, and pressing hat materials.

On account of the necessity of keeping the cost of construction within the limits of the appropriation it was found necessary to dispense with the room for a general agricultural museum which had been planned as a top story. It is hoped that one of the classrooms on the first floor may be temporarily utilized for this purpose and that at some time in the future an adequate room may be obtained to house all the growing agricultural collections. With an adequate and properly equipped museum, the University could not only preserve for historical record, but could display for the benefit of the students, the people of the State, and for visitors seeking information concerning the resources and possibilities of Nevada, such things as the following:

1. Our native forage grasses and other plants valuable as feed for sheep, cattle, and horses.
2. Specimens of typical soils, grains, garden, field and orchard crops from various sections of the State.
3. Examples of our different trees, with illustrations of their qualities and fitness for various purposes, such as mining timber, furniture, and building materials.
4. A complete herbarium showing all the plants found in Nevada. At present there is no herbarium in the State, public or private, which is easily available to those interested.
5. A display collection of the numerous poisonous plants and the troublesome weeds.
6. A display of the animal life of the State, including game animals, such as the deer, antelope, bear, mountain sheep, etc.; mammals useful for their fur, such as beaver, otter, mink, muskrat, and skunk; mammals harmful to our stock-raising and agricultural interests, such as coyotes, wolf, panther, lynx, gophers, ground squirrels, voles, weasels, rabbits, and others so mounted as to illustrate their surroundings and habits; stuffed specimens of our numerous game birds and representatives of our song and plume birds, many of which are of unrealized economic importance in holding in check the various insect pests which prey upon crops, ornamental plants, fruit and shade trees.

7. A complete exhibit of our wonderfully varied insect life, together with illustrative material showing the life histories and kind of damage done by the destructive species.
8. The food and game fishes of our streams and lakes.
9. Specimens of the various diseases of our cultivated plants.
10. Specimens illustrating the most important parasites and diseases of domesticated animals.
11. Fossil shells, bones, trees and other rock-interred remains of the life of the State.
12. Finally, there should be a small but representative collection of the plants and animals occurring in other parts of the world in order that the visitor may get a comprehensive idea of the wealth and variety of the animate nature in relation to man.

Such a museum would have a decided value in three ways:

1. It would be very helpful in connection with class instruction.
2. It would have a general educational value and afford pleasure to the people of the State and would help to bring the University to the people who support it.
3. An agricultural museum would have a distinct value in giving information to strangers and other visitors desiring to know something of the general resources and things of interest in the State.

ATHLETICS

THE ATHLETIC SITUATION

By R. M. WHISMAN, Coach

athletic situation, if the unforeseen setback of the present is at least satisfactory if not promising. The future, I, points to something better than the year that has just seen of partial success last year the University looked forward to with the expectation that it would bring a larger man had been enjoyed in the past. There were several good tude, but all calculations were overthrown by the enlistment of every athlete in school. It was hoped that the University would put out a winning team in football, but, with only a small and no new men with much high-school experience, this was a task for one year's work. However, several men if not taken into the army, should form the nucleus of a

season, though not as successful as in former years, turned appearances seemed to indicate that it would. There was a year's varsity squad in school, and the new material did promise. As the season progressed several sophomores and into good material and formed the varsity. The team succeeded an average of 500 per cent in the league and was prevented from placing more by inexperience than by lack of ability. These men will be in school next year and by that time should be in a condition of winning team. The result of the season in women's basketball was disappointing. The team made their trip to California with confidence possible, but returned with three defeats and no exception, the squad of twelve will return next year, and a year's experience should be able to retrieve their losses. Football and baseball have proved to be impossible this year, the main one being the shortening of the semester and the lack of program. In spite of the lack of intercollegiate activity, it has given an impetus that it will not be likely to lose for some

It has already been said it seems that Nevada should enjoy more success in the coming year than in the past. There will be availability of veterans for each team and means of getting out material to work on. Physical training and athletics will be in good and stable condition by the proposed physical-training program. The outlook is for a better year than Nevada has just gone through. It has been learned in the premature counting of chickens, that settled times as the present.

FOOTBALL



VARSITY SQUAD

The 1916 football season opened early in September, and there was considerable speculation on the possibilities of the season. A few of the old guard were back, and on the whole, things looked promising but very uncertain.

The first practise game was called on September 6 and thirty men showed up for training. Many of the new men were freshmen and showed considerable ability, but had no experience, and were therefore of little use as first-string material.

The team played its first game on September 21 with the Carson Indians at Reno. The varsity had no trouble in walloping the redskins, whitewashing them by a score of 50 to 0. During the game the team showed up well in tackling and offensive work and gave a more hopeful outlook for the season. Later developments showed that the Indians were no team to judge by.

St. Mary's College came to Reno on September 28. The visitors copped the game by a score of 41 to 0. The Nevada men played well, but were outweighed and lacked experience. During the third and most of the fourth quarters no score was made, and at this time both sides put up an exhibition of real football. For Nevada this was the best game of the season.

On October 13 the team went to Berkeley to meet the California fresh. This game was another whitewash for Nevada and one which was not easy to take. The Nevada line worked well and was capable of handling their opponents, but the game was lost by costly fumbles and loose playing. The final score was 60 to 0.

The freshmen came to Reno for a return game on October 27. The game was largely a repetition of the first one, the score being a little smaller. Both teams entered the game with the idea that the chances for a victory lay with Nevada, but the thought was soon dispelled. Nevada started to fumble early in the game and continued to do so throughout the game. At no time during the game was the Cub's goal in danger, the Nevada backs being apparently unable to break away for any kind of a gain. The final score was 50 to 0.

The season throughout was disastrous for Nevada. Most of the available men were unseasoned to the game, and the few veterans who were at hand could not hold the team together. A limited few excellent men were developed, and on these men lie Nevada's hopes for the coming season.

BASKET-BALL



VARSITY SQUAD

Savage, O'Brien, Martin, Cessna, Lattin, Gooding.

again the most successful sport of the year for the University. Basketball Nevada has always been among the leaders of the Pacific League and this season was no exception. Another fact we are proud of is the long series of consecutive seasons that have been won on the home floor by a college team.

The first game was with the College of Pacific on January 28 at Reno. The team was unable to hit the basket, but played poor ball. The Pacific team could not hit the basket, losing the game by a score of 13 to 0.

Next week the St. Ignatius team came to Reno. They, too, were unable to hit the basket. The game was so large a score as the Pacific team. The game was ragged with considerable fouling on both sides. In both games Savage was the star.

The final score was 31 to 13. On a week's trip to the coast on February 20 to play four games, in which the first two games were won caused every one to expect a big win, but that did not happen.

Games were played at Davis on February 12. The farmers were no exception and the final score was 36 to 15, Nevada playing all her subs.

Nevada went down to defeat at Stanford by a score of 20 to 15. The team played even with the Cardinals the first half, but lost the second half. Pat O'Brien starred in this game and made most of the points.

The next team to win from Nevada. The game was lost by a narrow margin. Every man on the team played in top-notch form, simply being out of sync. The score was 27 to 47.

The team went to Berkeley and lost the slowest and poorest game of the season by the score of 20 to 27. Both sides played poor ball.

The season in the middle position with 500 per cent, which was a record. The teams finished the season in the following order: Davis, California, Nevada, St. Ignatius, Pacific, and Davis.

WOMEN'S BASKET-BALL



Women's basket-ball is another sport at which Nevada usually shines. The co-ed teams have met the best on the coast and are as a rule successful.

On November 13, thirty-two girls reported for work, including several members of last year's varsity squad. They made good progress, and by the opening of the second semester practise games were scheduled, but the first real trial did not come until the coast trip. Early in the second semester games were scheduled with the College of Pacific, Stanford, and Mills. Nevada has played all three before, Pacific and Stanford being the regular rivals. All three games were to be played in one week-end trip, which necessarily meant a hard schedule.

The College of Pacific was played on February 14. In a slow game, marked by continual fouling, the Pacific team defeated Nevada by the score of 35 to 18. The first half of the game was nearly even, Pacific having a shade the better of it. In the second period Tidmarsh, a Pacific star, made 18 points while Nevada secured only 8.

The following day the team played at Stanford. Like the Pacific game, Nevada held her own the first half, but slowed down during the second. Stanford also pinned her faith on one tall forward. This game was the best of the series and the defeat was easier to take, as Stanford had a good team and the game was fast. The final score was 23 to 7.

The final game was played at Mills on February 16. Mills placed a good team on the floor, and in addition to this Nevada was not playing up to form. Through the efforts of Fuss, Nevada finished the first half in the lead. The second period, however, went against Nevada, Mills scoring 18 points to 3. The game ended with the score at 28 to 18.

Although the series was disastrous for Nevada, there is reason to expect better results in the coming season. The team is potentially strong and, as nearly every member will return next year, the team will then have a chance to come back.

The lineup was as follows: Gladys Dunkle and Edna Clausen, centers; Helen Fuss and Rose Harris, forwards; Salome Riley and Isabelle Slavin, guards; Lavina Shields, Lois Kimmel, Hattie Organ, Hulda Shartel, and Ruth Billingshurst, substitutes.

WOMEN'S ACTIVITIES AT THE UNIVERSITY

By FAITH MARIS, '18

President Manzanita Hall Association, 1917-18

Women have been left in the majority at the University through the heavy inroads made on the male attendance by the war. As a result, women's activities have taken on a new significance. The girls have learned, not only to provide manless amusements, but have developed a splendid spirit of cooperation. Organizing and executive ability which would have been unnoticed in normal times has been brought to the surface.

One of the chief factors in drawing the women of the University into a cooperative unit has been the Women's League. This organization, which includes all women students, has, in the year of its existence, gained considerable strength and influence. A women's association was looked upon by many as superfluous, and it was feared that it would not work in harmony with the A. S. U. N. However, since, in the sphere of women's interests, it has filled a real need without interfering with the functions of other organizations, opposers have turned into loyal supporters. Last year at Christmas the Women's League sent boxes filled with candy and other nice things to all of the men who had left college to enter the national service. Good speakers were secured to address the girls on several occasions, and at the end of the year the Women's League gave a scholarship of \$25 to a girl student of high standing. The League has been a clearing-house for all matters concerning women, and plans for next year include a wider program of service.

Fresh interest was taken in athletics last year because of the resumption of intercollegiate basket-ball for girls. Although the season brought little success, the increased number of girls taking an interest in the sport was encouraging. Tennis came in for its share of attention, and the crowded condition of the courts is creating a demand for new ones. The esthetic dancing class was larger last year than ever before. At the several physical-education demonstrations held during the year there was unusually clever dancing as well as excellent drill-work.

The Friday teas at Manzanita Hall, where the classes alternated in pouring and serving, were a pleasant diversion in a year of little social activity. The formal manless dance given by the Pan-Hellenic Association to all girls in college last December, was a great success. The hostesses, attired in dress suits and military uniforms, escorted their guests to the gymnasium and made most convincing dancing partners. The Tri Delt jinks was another of the merry-makings for girls that will long be remembered. While there were very few formal functions last year, no one seemed to mind their absence. Informality and economy marked University affairs, and, aside from missing the boys, every one had as good a time as usual.

From social gatherings to warwork is not a far jump, for wherever girls were gathered together socially their knitting needles moved as fast

as their vocal organs. A Red Cross auxiliary was established at Manzanita Hall early in the fall. Surgical dressings were made at the rate of 3,000 a month, and, in addition, nearly every girl was knitting. The list of knitted garments turned out numbered 30 sweaters, 30 scarfs, and 19 helmets.

A high standard of work was maintained and interest in it was well sustained throughout both semesters. Manzanita Hall bought a Liberty Bond of the second issue, and was active in furthering the War Savings Stamp campaign. University girls participated in local patriotic demonstrations and parades. Another branch of war work which interested many girls was food production and conservation. A number took the short courses in farm and garden work and in tractor running, with the expectation of working in rural districts during the summer. Others studied at the Reno Red Cross workroom, with the purpose of taking new ideas back to their home towns. The girls of the University are very much alive to their opportunities for helpful service at this time of national need, but deem their University education too valuable to be given up for more spectacular work elsewhere.

OUTSIDE ACTIVITIES

By FAITH MARIS, '18

ds in preparing young people to realize and develop
ies and to live socially useful lives, college training
or less "outside activity." This convenient phrase
l University organizations as well as in athletic
e share of a student's time should be spent working
s is highly desirable, both as useful preparation for
ies later on and as recreation during college. Jack
and Jill a dull girl if they go to college simply to
nformation. They must learn to mingle and cooper-
. At the University of Nevada there is a sufficiently
clubs and societies that every student may find at
se aims he is in sympathy.

pper-class honor societies, the girls' dramatic club
l Keys. Delta Alpha Epsilon, the girls' dramatic
members only English majors and minors who have
larship and have shown marked dramatic ability.
a secret society, composed of junior and senior men
prominence in student affairs. The two athletic
he Block N for men and the Gothic N for women.
n through participation in one of the major sports
of the season.

ating club, is open to any student who is interested
g and debate. It is under faculty direction. Mu
hematics club, admits math majors and minors who
ence. There are three departmental clubs for men:
club, popularly known as the "Aggies," the Engineer-
Crucible Club. These clubs stimulate interest in
departments. Until last year the Men's Glee Club
of which the University could be justly proud. Last
scarcity of material, there was no Men's Glee, where-
lee Club grew in prestige until is has achieved an
a for choral and part singing.

men's Christian Association has a membership of
important factor in the religious and social life of
general secretary is employed to direct the work of
The students in the State Normal School are organ-

The Womens' League is an organization which
men students of the University. It seeks to promote
deals with matters of interest to women.

mitories are organized with systems of self-govern-
ments. Pride and loyalty are shown by the men and
attitude toward their respective residence halls. The
y the most important, organization on the hill is
everybody is a part of it. The Associated Students
of Nevada is the forum where all matters of general
used and plans and policies formed. It is the unify-
aws together all the threads of University life.

THE ALUMNI ASSOCIATION

The officers of the Alumni Association for the year 1918-1919 are follows:

President, F. J. Delonchamps, '04.

Vice-President, Mrs. Florence H. Church, '02.

Secretary-Treasurer, Mrs. Louise Blaney, '95.

Members of Executive Committee (in addition to officers):

May S. Schuler, '09.

Halbert B. Bulmer, '05.

Alumni Senate—

Delle B. Boyd, '01.

Mrs. Theodora Fulton, '95.

Peter Frandsen, '95.

F. H. Norcross, '91.

Emmet D. Boyle, '99.

E. E. Caine, '93.

B. J. McBride, '06.

Mrs. Anna H. Wardin, '94.

Bertha Knemeyer, '06.

J. H. Clemons, '96.

A. M. Smith, '00.

Melvin E. Jepson, '11.

Silas E. Ross, '09.

Frank L. Peterson, '07.

Robert Farrer, '12.

The General Alumni Association holds an annual meeting during Commencement Week. The Alumni Senate holds an annual meeting the Saturday preceding Baccalaureate Sunday.

ALUMNI REGISTER

The following Alumni Register contains the names of all graduates to have received degrees from the University of Nevada. The list has been carefully revised and corrections brought down to date as far as possible. The names of married women are arranged according to maiden names. All locations given are in Nevada unless the name of the State follows.

In the body of the register an asterisk indicates the person to whose name it is prefixed is not living; in the index the same fact is indicated in *italics*.

Classes are urged to designate class secretaries as a valuable means of maintaining closer connections with each other and with the University.

In moving from place to place it is hoped that Alumni will send to the University the new address.

It will be esteemed a favor if any one noting needed corrections or additions will send to the President of the University such information which will improve the records:

CLASS OF 1891

Frederick Amos Bristol, B.A., Mining Engineer. *1913.
 Harry C. Cutting, B.A., Capitalist, 777 Monadnock Building, San Francisco, Cal.
 Frank H. Norcross, B.A.; LL.B., Georgetown University, 1894; Honorary LL.D., Nevada, 1911; Attorney-at-law, Reno. 701 Lake Street.

Ina H. Stiner, B.A., Teacher, Porterville, Cal.
 *Hugh Smith Swan, B.S., Mining Engineer. *1894.

CLASS OF 1894

William E. Barney, B.A., Farming, Goldville, Eureka County.
 Luanche Davis, B.A., 2000 Baker Street, San Francisco, Cal.
 Robert M. Lewers, B.S.; B.Sc., LL.B., Georgetown University, 718 East Capital Street, Washington, D. C. Examiner, Patent Office, Division 4, Washington.
 Frederick Stadtmuller, B.S., 566 Ridge Street, Reno. Assistant Cashier Washoe County Bank.

Frederick C. Frey, B.S., 3401 Richmond Avenue, Oakland, Cal. Mining Engineer with Erdman and Sielcken Company of Batavia.
 Charles Magill, B.S., Mineral Land Inspector, Southern Pacific Company, San Francisco, Cal.

Anna H. Martin, B.A.; B.A., Stanford, 1894; M.A., 1897. 157 Mill Street, Reno. Independent Candidate for U. S. Senate from Nevada in 1918.
 Anna H. Schadler, B.A. (Mrs. E. E. Wardin), 130 West Liberty Street, Reno.

Harry E. Stewart, B.S., 220 Mill Street, Reno. Manager, Nevada Transfer Company, 142 E. Second Street.

CLASS OF 1893

James Bell, B.A., 710 N. Virginia Street, Reno. Teacher of Languages, Reno High School.
 Charles P. Brown, B.S., Assistant Professor of Mining, University of Nevada. *1900.
 Edwin E. Calne, B.A., Attorney-at-law, Elko.
 Charles R. Lewers, B.A.; B.A., Stanford, 1896; LL.B., Harvard, 1899. 444 Belvedere Street, San Francisco. Attorney, Southern Pacific Company, San Francisco, Cal.

CLASS OF 1895

Louise Blum, B.A. (Mrs. F. L. Blaney), 426 Lake Street, Reno. Secretary to the President and Board of Regents, University of Nevada.
 Joseph Durkee, 2211 Oregon Street, Berkeley, Cal. With Land Department, Southern Pacific Company, San Francisco, Cal.
 Samuel C. Durkee, B.S., Mining Engineer, Manhattan.
 Albert J. Flood, B.S., Farming, Vulcan, Alberta, Canada.
 Winfield J. Flood, B.S., Mining Engineer, with United Verde Copper Company, Jerome, Arizona.

Peter Frandsen, B.A.; B.A., Harvard, 1898; M.A., 1899. 210 Maple Street, Reno. Professor of Biology, University of Nevada.

Stella M. Linscott, B.A., 2011 Yolo Avenue, Berkeley, California.

*Ralph Lemmon Osborn, B.S. *1899.

Mary E. North, B.A. Last address, Salt Lake City, Utah.

William H. North, B.A., Mining Engineer, Standard Silver-Lead Company, Silverton, B. C.

*Frank H. Saxton, B.S., Mining Engineer. *1907.

Alice Mabel Stanaway, B.A.; Graduate, Boston Conservatory, 1899. (Mrs. George A. Briggs), 153 Myrtle Street, Waltham, Mass. Member of the Faculty of the Boston Conservatory.

Theodora W. Stubbs, B.A.; B.A., Stanford, 1901. (Mrs. J. M. Fulton), 853 N. Center Street, Reno.

Grave V. Ward, B.A., 613 N. Center Street, Reno.

CLASS OF 1896

Adelaide M. Boyd, B.A. (Mrs. Joseph Durkee), 2211 Oregon Street, Berkeley, Cal.

William L. Brandon, B.A., 808 Chestnut Street, Reno.

Albert W. Cahlan, B.S., Contracting Carpenter, 815 N. Center Street, Reno.

Jay H. Clemons, B.A., 404 South Virginia Street, Reno. Land Commissioner, Union Land and Cattle Company, Reno National Bank Building.

Louise Frey, B.A. (Mrs. Charles Sadler), Golden Hotel, Reno.

*John L. M. Henry, B.S., Mining Engineer. *1918.

*Andrew Hansen, B. S. Deceased.

Gertrude Hironymous, B.A. (Mrs. H. F. Dangberg), Minden.

Fred M. Linscott, B.S., Mining Engineer, Golden Valley, Rhodesia, South Africa.

Arthur P. Mack, B.S., Mining Engineer, Dayton.

Emmet A. Powers, B.S., Farming, Eagleville, Cal.

William H. Seagrave, B.S., Mining and Consulting Engineer, Seattle, Wash.

Laura Smith, B.A. (Mrs. W. G. Adamson), Winnemucca.

May Palmer, B.A. (Mrs. May Tilley), Last address, Pine Grove.

Fred Waltz, B.A., 507 West Sixth Street, Reno, Ranching.

Albert W. Ward, B.A., Deputy Treasurer, Esmeralda County, Goldfield.

Maude M. Wheeler, B.A.; M.A., University of California. (Mrs. Hugh Senseny), Reno.

Otto T. Williams, B.A., Attorney-at-law, Elko.

CLASS OF 1897

George Bliss, B.S., Superintendent, Lake Tahoe Transportation Co., Tahoe City, Cal.

Gertrude C. Bonham, B.A., 1929 Grand Street, Berkeley, Cal. Teacher.

Robert M. Brambila, B.S., Lieutenant Colonel, N. A., American Expeditionary Forces.

Alice E. Edmunds, B.A. (Mrs. William Sauer), Franktown.

Amy Edmunds, B.A., Franktown. Secretary, Non-Partisan League of North Dakota.

John N. Evans, B.S., 835 Evans Avenue, Reno.

Martin Feeney, B.S., in Office of Commissioner of the Port, San Francisco, Cal.

Victoria J. Godfroy, B.S. (Mrs. Alfred L. Longley), 821 West Silver Street, Butte, Montana.

Jerome Higgins, B.S., Mining Engineer, Manhattan.

Edmund Lachman, B.S., with Western Woodware Company, El Paso, Texas.

John Rollin Magill, B.S., with Union Iron Works, San Francisco, Cal.

Katherine Riegelbuth, B.A.; M.A., Columbia, 1917, 543 Lake Street, Reno. Associate Professor of German, University of Nevada.

Harry A. Start, B.A. Address not known.

Susie M. Tredway, B.A. (Mrs. Leo Kaiser), Imlay.

CLASS OF 1898

*Maude Neva Bruette, B.A. (Mrs. W. Ward.) *1912.

Samuel Bradford Doten, B.A.; M.A., 1912, 129 Elm Street, Reno. Director, Nevada Agricultural Experiment Station, University of Nevada.

Dennis M. Duffy, B.A., Attorney-at-law, Mills Building, San Francisco, Cal.

Leonard G. Ede, B.A.; D.D.S., 1906, University of California, Ranching, Vinton, Cal.

Philip E. Emery, B.S. Address not known.

William Everett, B.S., with Western Ore Purchasing Company, Hazelton, B.C.

Donald R. Finlayson, B.S., Mining Engineer, with Hayden Hill Mining Company, Jerome, Arizona.

John Allen Fulton, B.S., Mine Manager, Melones, Cal.

retto Hickey, B.A. (Mrs. G. A. V. Hughes), 136 South Virginia Street, Reno.
 Ken Keddle, B.A. (Mrs. Gilbert Palmer), Garfield, Utah.
 Len R. Lewers, B.A. *1903.
 William Luke, B.S., Coalinga, Cal. Mineral Land Inspector for the Southern Pacific Company.
 Lillia Murphy, B.A. (Mrs. J. Litster), Austin.
 Lillie Phillips, B.A. (Mrs. Sadie Dawson), 135 Bell Street, Reno. Clerk County Treasurer's Office, Washoe County.
 John J. Sullivan, B.A.; A.M., St. Francis Xavier College, 1901; M.D., Columbia, 1902. Superintendent, Nevada State Hospital for Mental Diseases, Reno.
 Catherine Sunderland, B.A. (Mrs. J. B. O'Sullivan), 557 N. Lake Street, Reno.
 John Wesley Thompson, B.S., Mine Manager. Address not known.
 Maude Thompson, B.A. (Mrs. P. A. Dimmick), Oakland, Cal.
 Guy Walts, B.A., Rancher, R. F. D. No. 1, Reno.
 John Sunderland, B.A., with Canadian Expeditionary Forces.

CLASS OF 1899

Ellie B. Boyd, B.A., 437 Chestnut Street, Reno. Deputy, County Recorder's Office, Washoe County.
 Emmet D. Boyle, B.S., Governor of the State of Nevada, Carson City.
 Thomas P. Brown, B.A., Manager, "Examiner" Branch Office, Sacramento, Cal.
 Nelson Brunette, B.S., Mining Engineer. *1911.
 John J. Bristol, B.S., Mining Engineer. *1916.
 Gertrude Caine, B.A. (Mrs. T. W. Martinez), 428 Washington Street, Reno.
 Harry H. Dexter, B.S., Mining Engineer. *1917.
 Adore Dapson, B.A. (Mrs. F. J. Rullson), 522 West Street, Reno.
 Alfred Doten, B. A., Secretary, Flanigan Warehouse Company, Reno.
 Nathaniel Dunsten, B.S. Address not known.
 Philip E. Emery, B.S. (See also Class of 1908.) Address not known.
 Robert H. Frazer, B.S., Ranching, R. D. F. 2, Modesto, Cal.
 M. Gregory, B. A., 3999 Clark Street, Oakland, Cal. Deputy State Bank Examiner for California.
 David Ferguson, B.S., Mining Engineer. Deceased.

Louise Julien, B.A., 9th and Sierra Streets, Reno.
 Charles P. Keyser, B.A., Department of Parks, Portland, Oregon.
 J. M. Libby, B.S., Mining Engineer. Ray, Arizona.
 Alfred L. Longley, B.S., Mining Engineer, 821 West Silver Street, Butte, Montana.
 Lawrence, Thos. J., B.S. Address not known.
 Thomas W. Mack, B.S., Mining Engineer, Hobart Building, San Francisco, Cal.
 Mattie Parker, B.A. (Mrs. Guy Walts), R. F. D. No. 1, Reno.
 Almee Sherman, B.A. (Mrs. Chas. P. Keyser), Portland, Oregon.
 Elizabeth S. Stubbs, B.A. (Mrs. Gordon H. True), University Farm, Davis, Cal.
 Louise G. Ward, B.A. (Mrs. J. E. Donohue), 2411 McKinley Avenue, Berkeley, Cal.
 *Enid Williams, B.A. *1910.
 Louise Pohl, B.A. Address not known.
 *George Raymond Richard, B.S., Mining Engineer. *1906.
 David Curtis Seagrave, B.S., West Point graduate. Lieutenant Colonel, N. A., Ordnance Branch, Washington, D. C.
 Robert E. Tally, B.S.; M.E., 1917. Manager, United Verde Mining Co., Jerome, Arizona.

CLASS OF 1900

Mary E. Arnot, B.A. (Mrs. A. L. Rice), Oakland, Cal.
 William F. Berry, B.S., Mining Engineer, Abangarez, Costa Rica.
 William H. Brule, B.S., Merchant, 407 Battery St., San Francisco.
 John Chism, B.S., 1137 West Second Street, Reno. Manager, Chism's Ice Cream Co.
 Lulu O. Culp, B.A. (Mrs. E. R. Sheffield), 186 Prospect Place, Brooklyn, New York.
 Carlotta Dodd, B.A. (Mrs. Forrest Young), Last address, Beckwith, Cal.
 Daniel W. Gault, B.S., Mining Engineer, Reno.
 Lucy Grimes, B.A. (Mrs. Alfred Burton), Fallon.
 David W. Hays, B.S., Engineer, South Alberta Land Company, Medicine Hat, Alberta.
 Ida Holmes, B.A. (Mrs. David W. Hays), 522 C. 6th Avenue, Medicine Hat, Alberta.
 John B. Jones, B.A., Dentist, Sacramento, Cal.

Scott E. Jameson, B.S., Analyst, State Mining Laboratory, University of Nevada, Reno.
 *George Allen Leavitt, B.A. *1910.
 William F. Norris, B.S., Mining Engineer, Battle Mountain.
 Amella North, B.A. (Mrs. Oscar Ambur.) Address not known.
 Ruby North, B.A. Address not known.
 *Bessie Rousseau, B.A. *1900.
 Clara Rammelkamp, B.A. (Mrs. C. H. Masterson), Yerington.
 Gustav J. Sielaff, B.S., 317 Maple Street, Reno. 1st Lieutenant American Exped. Force, France.
 Frances A. Skinner, B.A. (Mrs. Frances Degman), 631 Humboldt Street, Reno.
 Smith, Alfred M., B.S., 229 Maple Street, Reno. Mineral Land Inspector, Southern Pacific Railway Company.

CLASS OF 1901

James F. Abel, B.A., Paradise Hill, Nevada. Regent, University of Nevada.
 Irwin W. Ayers, B.A.; M.A., University of Virginia, 1903. Attorney-at-law, Oakland, Cal., 1405 Oak Street.
 Kate Crocker Bender, B.A. (Mrs. Geo. Worn), Hobart Mills, Cal.
 Fenton A. Bonham, B.A., 1929 Grant Street, Berkeley, Cal. Real Estate.
 Vera Stuart Davis, B.A. (Mrs. Floyd Davis), 2745 Elmwood, Berkeley, Cal.
 Irene Ede, B.A. (Mrs. A. W. H. Wullschlegler), 544 West Sixth Street, Reno.
 Joseph W. Hall, B.A., Draughtsman, Surveyor-General's Office, Post-office Building, Reno.
 Edward E. Hardack, B.S., Mining Engineer, Oakland, Cal.
 William Leete Hayes, B.S., Mining Engineer, Placer County Bank Building, Auburn, Cal.
 William Arthur Keddle, B.S., Stockman, Fallon.
 Frank J. Kornmayer, B.S., Member of firm National Cash Market, Second Street, Reno.
 Tillie Naomi Kruger, B.A., Settlement Worker, New York City. Address not known.
 Agnes J. Maxwell, B.A., 217 E. Taylor Street, Reno. Teacher, South Side School.
 Charles G. Mayer, B.S., 731 Wells Fargo Building, San Francisco, Cal.
 William Joseph Moran, B.S., Mining Engineer, Tonopah.
 Maude Nash, B.A. (Mrs. George Tranter), Truckee, Cal.
 LeRoy, L. Richard, B.S., Manager Coal-
 inga Refining Co., Coal-
 inga, Cal.

Alfred R. Sadler, B.S., Draftsman, Surveyor-General's Office, Reno.
 August H. Schadler, B.S., Civil Engineer, Montague, Cal.
 Ethel V. Sparks, B.A. (Mrs. Walter Siders), Pocatello, Idaho.
 *Donald Patterson Stubbs, B.S. *1910.
 Ralph S. Stubbs, B.S., Traffic Manager, American Sugar Refining Company of New York, 117 Wall Street.
 William Leslie Taylor, B.S., Manhattan, Superintendent of the White Cap Mine.
 Richard C. Tobin, B.S., with the American Sugar Refining Company of New York City.
 David S. Ward, B.A., Goldfield.

CLASS OF 1902

Alice Leona Allen, B.A. (Mrs. L. W. Haworth), Austin. Publisher of the Reese River Revellie and the Battle Mountain Scout.
 George E. Anderson, B.S., Deputy Superintendent of Public Instruction, Fifth Supervision District, Las Vegas.
 *Edwin Percy Arnot, B.S., Mining Engineer. *1913.
 John Carlton Bray, B.S., Mining Engineer, Lovelock.
 John D. Cameron, B.S., Deputy County Treasurer, Washoe County, 20 Vine Street, Reno.
 Seymour Case, B.S., State Engineer, Carson City.
 Florence H. Church, B.A.; M.A., 1910. (Mrs. J. E. Church, Jr.), 358 Washington Street, Reno.
 Mary Elizabeth Evans, B.S. (Mrs. L. Robinson), 719 Sierra Street, Reno.
 Blaine Grey, B.S. Address not known.
 Forence R. Hall, B.A. (Mrs. W. M. David), 1027 Sierra Street, Reno.
 Harry B. Jameson, B.S., Mining Engineer, 220 Maple Street, Reno.
 Benjamin Cleveland Leadbetter, B.S., Mining Engineer, Minden.
 John S. Mayhugh, B.S., Elko.
 Elizabeth McCormack, B.A., 329 M Street, Teacher, Reno Public Schools.
 *Laura B. Orr, B.A. (Mrs. Leroy Richardson.) *1908.
 Patrick Joseph Quinn, B.S., Mining Engineer, Manhattan.
 Harford C. Southworth, B.S., Mining Engineer, Federal Building, Los Angeles, Cal.
 Elizabeth Webster, B.A., 1734 N. Van Ness Avenue, Los Angeles, Cal. Teacher, Los Angeles Schools.
 Marian E. Young, B.A. (Mrs. John Donenwith), Taylorville, Cal.

CLASS OF 1903

rie Allen, B.A. (Mrs. J. V. Fenster-maker), Kimberley.
 randa Ray Arms, B.A.; B.S., Colum-bia, Callistoga, Cal. Teacher of Home Economics, Santa Maria Union High School, Santa Maria, Cal.
 ank Barker, B.A., in Surveyor-Gen-eral's Office, Postoffice Building, San Francisco, Cal.
 arcus G. Bradshaw, B.S., Mining En-gineer, Crown King, Arizona.
 mes V. Comerford, B.A., Deputy Superintendent of Public Instruc-tion, Second Supervision District, Ely.
 oodwin S. Doten, B.A. *1911.
 lward J. Erickson, B.S., Mining En-gineer, Tonopah.
 illian E. Esden, B.A., Sparks. Teacher in Public Schools.
 illiam Burt Harrington, B.S., Mining Engineer, 215 C St., Salt Lake City, Utah.
 bert W. Hesson, B.S., Merchant, Elko.
 ana S. Johnson, B.A. (Mrs. Walter Bracken), Las Vegas.
 thur L. Kelley, B.S., Mining Engi-neer, with Ray-Kelvin Mining Co., Kelvin, Arizona.
 orence V. Kent, B.A. (Mrs. M. H. Wallace), Fallon.
 en P. Leadbetter, B.S. Address not known.
 rothy S. Levy, B.A., 1114 Sutter Street, San Francisco, Cal. With Marmon Automobile Company.
 rank H. Luke, B.S., Mine Manager. *1918.
 xe McClintock, B.S., Mining Engi-neer. Last address Chewelah, Washington.
 mes G. McVicar, B.S., Mining Engi-neer, West End Mines, Tonopah.
 eph Page Mack, B.S., Dayton. Sec-ond Lieutenant, 55th Engineers, American Exped. Forces, France.
 ernard F. O'Hara, B.S., Mining En-gineer. *1913.
 mes G. Peckham, B.S., with Sur-veyor-General's Office, San Fran-cisco, Cal.
 lizabeth Rammelkamp, B.A. (Mrs. Elmer Kirkwood.) *1907.
 bel S. Richardson, B.A. (Mrs. W. H. Bishop), Ely.
 aude P. Schoer, B.A., Principal, Pub-lic Schools, Ukiah, Cal.
 arl E. Snap, B.A. (Mrs. Fred Whit-aker), Rebel Creek.
 bert A. Stewart, B.S., in Mercantile Business, Ajo, Arizona.
 red T. Taylor, B.A. Address not known.

Olive E. Weathers, B.A. (Mrs. W. A. Flickinger), Floriston, Cal.
 Fred Whitaker, B.S., Rebel Creek.
 Hicksey May Wilson, B.A. (Mrs. A. J. Robertson), Visalia, Cal.

CLASS OF 1904

Laura Arnot, B.A. (Mrs. Edgar Lea-vitt), 4442 Mission Street, San Francisco, Cal.
 Mabel Blakeslee, B.A. (Mrs. Andrew Hughes), Hobart Mills, Cal.
 Jeanette Cameron, B.A. (Mrs. John Milton Rhodes), Long Valley, Cal.
 William P. Catlin, B.A., 730 S. Center Street, Reno. Mineral Land Exam-iner, Southern Pacific Company.
 Albert Caton, B.A., 227 Clay Street, Reno. With Farmers' and Merch-ants' Bank.
 Fred J. Delongchamps, B.S., 403 Mill Street, Reno. Architect, Gazette Building, Reno.
 Allen S. Ede, B.S., with City Engineer's Office, Los Angeles, Cal.
 Benjamin Allen Evans, B.S., 835 Evans Avenue, Reno.
 Agnes Pearl Gibson, B.A. (Mrs. E. H. Chester), 850 South Alvarado Street, Los Angeles, Cal.
 William M. Kearney, B.S., Attorney-at-law, Nixon Building, Reno.
 Fred A. Nathan, B.S., in Mercantile Business, Ajo, Arizona.
 Mabel Plumb, B.A. (Mrs. Ralph King), Mokelumne Hill, Cal.
 James H. Price, B.S., Mining Engineer. Address not known.
 Georgia Rammelkamp, B.A. (Mrs. Mas-terson), Tonopah.
 Frank P. Thompson, B.S., Furniture Business, Burley, Idaho.
 William B. Thompson, B.S., with Main-tenance of Way Department, South-ern Pacific Company, Sacramento, Cal.
 George West, B.S., Manager, Telephone Company, Yerington.
 Anna Woodward, B.A. (Mrs. Reid), Edgemont.
 Nathaniel D. Wright, B.S., 449 South Center Street, Reno.

CLASS OF 1905

Mary E. Bacon, B.A. (Mrs. Harry C. Chism), 316 Belmont Street, Reno.
 Emily Berry, B.A. (Mrs. Geo. Terron), Planfield, N. J.
 F. Dean Bradley, B.S., Mining Engineer, Last address Reno.
 Lucy Brannin, B.A. (Mrs. Lewis Davis), Sparks.
 Halbert B. Bulmer, B.S., Acting Com-missioner, Pure Food and Drugs Department, University of Nevada, Reno.

Harry C. Chism, B.S., 316 Belmont Street, Reno. City Engineer for Reno.

Mary Elizabeth Cooke, B.A. (Mrs. Albert Saxton), Imlay.

Catherine Hand, B.A. (Mrs. Frank H. Luke), Clerk Comptroller's Office, University of Nevada.

Mark Kelley, B.S., Mining Engineer, Cheyenne, Wyoming.

Harold Louderback, 1222 Geary Street, San Francisco, Cal. Commanding Officer, 13th Company, S. F. Coast Artillery Corps, Fort Baker, Cal.

Margaret E. Mayberry, B.A., 2400 Durant Ave., Berkeley. Bookkeeper.

James Nesbitt, B.S., with Union Meat Co., Tonopah.

William J. O'Neill, B.S. Address not known.

Walter S. Palmer, B.S.; E.M., Columbia, 1907. 201 State Street, Reno. Professor of Metallurgy, University of Nevada.

William Pearson, B.S., with Minden Creamery. Chemistry Dept., Minden.

William S. Pope, B.S., Virginia City.

Cassius Smith, B.S.; M.E., 1911. City Manager, Montrose, Colorado.

Claude L. Smith, B.S., Mining Engineer. Cadet, Aviation Branch. San Antonio, Texas.

Obeline Souchereau, B.A., Clerk, County Recorder's Office, Court House, Reno.

William C. Stark, B.S., with Reno National Bank, Reno.

Abram H. Steckle, B.S., Farming, Milk River, Alberta, Canada.

Olive Wise, B.S. (Mrs. William Prince Catlin), 730 S. Center Street, Reno.

John W. Wright, B.S., Exchange Clerk, Washoe County Bank, Reno.

CLASS OF 1906

Mary Emma Arms, B.A. (Mrs. A. R. Jacks), Meadow Valley, Cal.

John Scott Case, B.A., Paradise Valley.

Helen E. Cazler, B.A. (Mrs. N. H. Franklin), Wells.

Harry H. Cazler, B.S., Stockman, Wells.

Frank Drake, B.S., Major, Coast Artillery, N. A., Amer. Exped. Forces.

Alma Goble, B.A. (Mrs. Leland S. Weathers), Deeth.

Alfred Street Hamlin, Teaching in High School, Dinuba, Cal.

Beulah Hershiser, B.A.; M.A., 1911. (Mrs. Chas. P. Hymer), Tuscarora.

Gustav F. Hofmann, B.S., Principal, School of Mines, Goldfield.

Curry Jameson, B.S., 220 Maple Street, Reno.

Harry L. Jones, B.S., 1st Lieutenant, Cavalry, American Exped. Forces.

Bertha Knemeyer, B.A., Deputy Superintendent of Public Instruction, First Supervision District, Elko.

Ethel Marzen, B.S. (Mrs. B. G. McBride), Elko. In training, St. Luke's Hospital, San Francisco, Cal.

Alice H. Maxwell, B.A., Teacher, Public Schools, Sparks.

Bonnifield G. McBride, B.S.; M.E., 1911. Elko. Captain, Ordnance Reserve Corps, Aberdeen Proving Grounds, Maryland.

Laura McDermott, B.S.; M.S., University of California, 1906. Last address, Hollister, Cal.

Wilson McManaman, B.S. Last address, Monrovia, Cal.

Ada Morse, B.A.; B.A., University of California, 1908. (Mrs. A. H. Brandt), 918 Mono Street, Berkeley, Cal.

William J. O'Brien, B.S., Carson City.

Harriett Irene Peterson, B.A., Teacher of Piano, 421 Walnut Street, Reno.

Alwine Sleaf, B.A., 317 Maple Street, Reno. Teacher, Reno High School.

J. A. Smiley, B.S., 547 Soquel Avenue, Santa Cruz, Cal.

Harry M. Standerwick, B.A., 2106 Portola Way, Sacramento. In Office of Secretary of State.

Daniel H. Updike, B.S., County Surveyor, Washoe County, 132 Vine Street, Reno.

Sadie J. Weeks, B.A. (Mrs. Harry M. Standerwick), 2106 Portola Way, Sacramento, Cal.

CLASS OF 1907

Florence Blake, B.A. (Mrs. George Williams), Virginia City.

Edna Coll, B.A. (Mrs. R. G. McFadden), Petaluma, Cal.

Andrew C. Curran, B.S., Mining, Virginia City.

Jay A. Carpenter, B.S.; M.E., 1911. Mining Engineer, Tonopah.

Milan Davidovich, B.S., Mining Engineer, West End Consolidated, Tonopah.

L. H. Goltont, B.A., Principal, Public Schools, Lovelock.

James J. Hart, B.S.; M.E., 1911. Mining Engineer, Rattlesnake Jack Mining Co., Deadwood, S. D.

Miles B. Kennedy, B.S., Deputy Commissioner, Pure Food and Drugs Department, University of Nevada, Reno.

James D. Leavitt, B.S., with Reno Power, Light & Water Co., Reno.

Francis R. O'Leary, B.S., Mining Engineer, Winnemucca.

†Name changed from Goldstein.

ank LeRoy Peterson, B. S., Captain,
Ordnance Reserve Corps, American
Exped. Force.
George D. Powers, B.S. *1918.
J. J. Parker, B. A. (Mrs. George D.
Powers), Ely.
Ed Bruce Stewart, B.S. Last ad-
dress, Atlanta, Idaho.
Robert William Sawyer, B.S., Mining
Engineer, Wonder Mining Company,
Bridgeport, Cal.
Joseph D. Scott, B.S., Principal, High
School, Winnemucca.
Abel F. Snapp, B.A. (Mrs. Lawrence
Farrell), Rebel Creek.
Alfred E. Weddle, B.S., Contractor.
Last address, Los Angeles, Cal.
Land Stanford Weathers, B.A.,
Rancher and Stockman, Deeth.
Miko Yamaguchi, B.S. Address not
known.

CLASS OF 1908

Berta Cowgill, B.A. (Mrs. Walter Mil-
ler), Westwood, Cal.
John Newman Davis, B.S., Mining En-
gineer. Address not known.
Arthur Verrill Doane, B.S., Civil En-
gineer. *1915.
Anna S. Elam, B.A.; M.A., 203 Mill
Street, Reno. Teacher, Public
Schools.
Ed J. Freeman, B.S., Civil Engineer.
231 Arletta Street, Reno.
Lawrence J. Frey, B.S., Ranching, R. F.
D. 3, Junction City, Oregon.
Hugh James Gallagher, B.S., Salesman
with General Electric Company,
Balboa Building, San Francisco,
Cal.
Edward T. George, B.S., Battle Moun-
tain.
Mary June Kane, B.A. (Mrs. Grover
F. West). *1915.
Louis F. Kline, B.S., with City Engi-
neer's Office, Portland, Oregon.
William Hinkle Massey, B.S.; M.D.,
Cooper Medical Institute, Sur-
geon, U. S. Navy, Washington, D. C.
Melvin Mihills, B.S., 828 West 5th So.,
Salt Lake City, Utah. Mechanical
Engineer for Salt Lake Iron and
Steel Co.
Joseph Alphonse Nadon, B.S., 482 Jean
Street, Oakland, Cal., with West-
inghouse Electric Company, San
Francisco, Cal.
Mas. A. Norcross, B.A., Director, Agri-
cultural Extension, University of
Nevada, Reno.
Liza Overman, B.S. (Mrs. Chester
Hart), Fairview.
Antie Estella Prouty, B.A.; M.A., 1917.
132 West Tenth Street, Reno.
Teacher, Public Schools.

Frank James Ryan, B.S., Mining En-
gineer, Calliente.
Alfred H. Westall, B.S., Superintendent,
Nevada Hills Mine, Fairview.

CLASS OF 1909

Jules Raymond Gignoux, B.S., Mining
Engineer, Coalinga, Cal.
Winfield Scott Lake, B.S., Member of
the firm of Green and Lake, Print-
ers, Reno.
Georgia Alice McNair, B.A.; M.A., 1915.
705 North Virginia Street, Reno.
Teacher in Public Schools.
Effie Mona Mack, B.A., 428 Hill Street,
Reno. Teacher, High School.
Isabel Millar, B.A. (Mrs. Lorin
Kemp), Chuquicamata, Chili, South
America.
Mary Gertrude O'Neill, B.A. (Mrs. C. P.
Lyons), 1739 N. Bronson Avenue,
Hollywood, Cal.
Ihel Owaku, B.A. Address not known.
Stanley G. Palmer, B.S.; M.E., Cornell,
1910. 211 Mill Street, Reno. As-
sistant Professor of Mechanical En-
gineering, University of Nevada.
Mabel Lucy Reed, B.A. (Mrs. Harry
Robinson), Ruby Valley.
Charles D. Roedder, B.S., Mining En-
gineer. Last address, Reno.
Silas Earl Ross, B.S., 1043 N. Virginia
Street, Reno. Member of firm,
Perkins, Gulling Company.
May Marcella Schuler, B.A., 628 North
Lake Street, Reno. Secretary.
Dorothy E. Singer, B.A.; M.A., 1910.
Teacher, Public Schools, Goldfield.
*Reba Oliver Snare (Mrs. Lewis De-
Armond). *1916.
Homer L. Williams, B.S., Mining En-
gineer, Tonopah.
Blanche Nevada Young, B.A. (Mrs. H.
W. Goodin), Lovelock.
*Robert Wilburn Young, B.S. *1916.

CLASS OF 1910

Wallace D. Alexander, B. S., Secretary,
Fuel Administration, Carson City.
Clayton A. Bennett, B.S., Mining En-
gineer, Dome Mining Company, Por-
cupine, Ontario.
Irene Conkey, B.A. (Mrs. Lawrence J.
Frey), R. F. D. 3, Junction City,
Oregon.
Donald Miller Bird, B.S., Electrical En-
gineer, with General Electric Co.,
San Francisco, Cal.
George Curnow, B.S., Farming, Genesee,
Cal.
Lydia Colyer, B.A., Teacher. Home ad-
dress, Reno.
Helen Fulton, B.A., Y. W. C. A., Field
Secretary, Russ Building, San
Francisco, Cal.

William H. Goldsworthy, B.S., Mining Engineer, San Francisco, Cal.
 Dudley D. Homer, B.S., Mining Engineer. Assistant Manager, Devils-adero Mine, Salvador, Central America.
 *Hazel Pearl Larcombe, B.A. (Mrs. Clyde S. McKenzie). *1915.
 Louis S. Leavitt, B.S., Engineer, Siam.
 Margaret E. Mack, B.S.; A.M., Columbia, 1910. Dean of Women and Assistant Professor of Biology, University of Nevada, Reno.
 Archibald J. Millar, B.S., Civil Engineer, Gardnerville.
 Ernest D. Mack, B.S., 418 Cheney Street, Reno. Member of firm Mack Auto Co., Inc.
 Irene Myrtle Mack, B.A. (Mrs. H. P. Fisher), 1312 E. Washington Street, Stockton, Cal.
 Clyde Stuart McKenzie, B.S., Private, 27th Engineers, Camp Meade, Maryland.
 Lulu B. McMullen, B.A. (Mrs. Lulu Hurley), Teacher, Elko.
 Alice Woodward O'Brien, B.A., Sparks. Teacher, Public Schools, Minden.
 Audrey W. Ohmert, B.A. (Mrs. J. Ohmart), 704 Hoyt Street, Portland, Oregon.
 Dorothy Frances Parker, B.A.; M.A., 1912. Teacher, High School, Ely.
 Nicholas Louis Rossi, B.S., Civil Engineer. Address not known.
 Maude A. Sawin, B.A. (Mrs. C. C. Taylor), Carson City.
 John E. Sears, B.S., Farming, Colfax, Cal.
 S. Yamauchi, B.A. Address not known.

CLASS OF 1911

Ellsworth R. Bennett, B.S., Principal, Mining School, Tonopah.
 Florence Leslie Bray, B.A.; M.A., 1916. Teacher, Carson City.
 Cora M. Cleator, B.A. Last address, San Diego, Cal.
 Cecil Willis Creel, B.S., in charge Field Station, U. S. Dept. of Agriculture, Forest Grove, Oregon.
 Marlon H. Foss, B.S., Mining Engineer, 4625 Lake Avenue, Chicago.
 Hugo E. Hanser, B.S., Civil Engineer. Last address, Yerington.
 *Walter C. Harris, B.S. *1913.
 Vera Ellen Hasch, B.A. (Mrs. B. L. Holcomb), R. F. D. 1, Reno.
 Claud H. Helse, B.S., Mining Engineer, Notre Dame, des Anges, Quebec.
 Charles F. Hobbins, B.S., 829 N. Virginia Street, Reno. Private, Signal Corps, American Exped. Force.

John S. Horn, B.S., 1421 Sonjat Street, New Orleans, La. Chief Chemist, Jefferson Distillery Co.
 Melvin E. Jepson, B.S., 245 Mill Street, 1st Lieutenant Engineer Corps, American Exped. Force.
 Randall J. Layman, B.S., Electrical Engineer, Barstow, Cal.
 Agnes Mead, B.A. (Mrs. Don Bradner), Tonopah.
 Alfred Meyers, B.S., 109 Hillcrest Road, Berkeley, Cal. Mineral Land Inspector, S. P. Company, San Francisco, Cal.
 Gertrude B. Pike, B.A. (Mrs. Randall B. Layman), Barstow, Cal.
 Clinton W. Spark, B.S., Assayer, Tonopah.
 Harriet H. White, B.A., 304 Roberts Street, Reno. Teacher, Reno Public Schools.

CLASS OF 1912

Walter W. Anderson, B.S., Principal, Mining School, Ely.
 Elda Barber, B.A., 435 Riverside Avenue Reno. Teacher, Reno Public Schools.
 Charles Leroy Brown, B.A.; M.A., 1913, Reno.
 Daniel E. Bruce, B.S., with Nevada Wonder Mining Co., Wonder.
 Donald C. Cameron, B.S., Mining Engineer. Address not known.
 Rowena Glass, B.A. (Mrs. W. F. Barch), Clifton, Arizona.
 Virgil M. Henderson, B.S., Principal, Traveling Mining School of Nevada, Yerington.
 Helen R. Hobbins, 829 N. Virginia Street, Reno. Teacher, Reno Schools.
 August Holmes, B.A.; M.S., 1912. Chemist. 2419 Madison Avenue, Baltimore, Maryland.
 Mathilda Jepson, B.A., Gardnerville.
 Helena E. Joy, M.S., Teacher, Los Angeles Schools. Box 71, Hollywood, Cal.
 Margaret A. Langwith, B.A., Winnemucca.
 Donald Linton, B.S. Last address, McGill.
 Hazel Ohmert, B.A., Winnemucca. Teacher, Winnemucca Schools.
 Edgar Ford Pearson, B.S., 459 Hill Street, Reno. Captain, Co. E, 316 Engineers, American Exped. Force.
 Florence Reed, B.A. (Mrs. Paul C. Schraps), Guayaquil, Ecuador, S. A.
 Roland M. Seaton, B.S. Last address, Santa Rosa, Cal.
 Paul C. Schraps, B.S., Mining Engineer with S. A. Development Company, Guayaquil, Ecuador, S. A.

belle Schuler, B.A. (Mrs. Raymond Spencer), Walnut Creek, Cal.
 ymond Spencer, B.S., Walnut Creek, Cal. Capt. Signal Corps, Vancouver Barracks, Washington.
 ude Teel, B. S., Mining Engineer, Notre Dame, des Anges, Quebec.
 nel Thompson, B.A. (Mrs. Edward L. Zimmer), Franktown.
 el L. Tibbals, B.S., 2nd Lt., 117 Engineers, Co. D., American Exped. Force.
 win E. Williams, B.S. Last address, Eureka, Cal.

CLASS OF 1913

rris D. Anderson, B.S., Civil Engineer. Last address, 370, 15th Avenue, San Francisco, Cal.
 olce A. Cagwin, B.A., Teacher, Public Schools, Sparks.
 rtimer M. Charles, B.S., with Nevada Packing Company, Reno.
 lian A. Davey, B.A., Grass Valley, Cal.
 rie A. De Flon, B.A., Teacher of Shorthand, Healds' Business College, San Francisco, Cal.
 dred A. Donohue, B.A. Address not known.
 rman L. Dorn, B.S., Mech. Engineer Co. B., 38th Engineers, Ft. Meyer, Virginia.
 ma D. Frisch, B.A. (Mrs. August Holmes), 2419 Madison Avenue, Baltimore, Maryland.
 ank Gignoux, B.S., Mech. Engineer, 643 Ralston Street, Reno.
 onard L. Gilcrease, B.S., 507 N. Virginia Street, Reno. Signal Corps, Wireless Division.
 na Hauss, B.A. (Mrs. Morris D. Anderson), 370, 15th Avenue, San Francisco, Cal.
 len Higgins, B.A. (Mrs. C. A. Hendel), Simpson.
 rtha Jones, B.A., Sweetwater. Teacher.
 ula Lewis, B.A. (Mrs. Joseph F. McDonald), 710 S. Virginia Street, Reno.
 Rear Mackay, B.S., with Union Land and Cattle Co., Topaz.
 yrd B. Patrick, B.S., Arlington Place, Reno. Capt. Tank Service, Camp Colt, Gettysburg, Pa.
 thur I. Reynolds, B.S., Consulting Engineer, Manila, P. I.
 ymond Robb, B.S., Assayer, Tonopah.
 illiam H. Settlemyer, B.S., Gardnerville. 2nd Lieutenant Engineers, American Exped. Force.
 y Wilhelmina Smith, (Mrs. Frank Gignoux), 643 Ralston Street, Reno.

Thomas M. Smithers, B.S., Lieutenant Engineers, American Exped. Force.
 Lee Stebbings, B.A., Chemical Engineer, Cleveland Dental Mfg. Co., Cleveland, Ohio.
 Florence E. White, B.A., Sierra Vista, Reno.
 Joseph W. Wilson, B.S., County Agent, Smith-Lever Extension, Yerington.
 Edith Winter, B.S., Whiterock.
 Elizabeth M. Winter, B.A., Whiterock.

CLASS OF 1914

Nell K. Barber, B.S., 435 Riverside Avenue, Reno. Aviation School, Columbia University, New York City.
 Anne P. Cozzallo, B.A., Truckee, Cal. Teacher, Public Schools, Sparks.
 Leslie Evans, B.S., County Agent, Smith-Lever Extension, Lovelock.
 Robert P. Farrer, B.A., Gardnerville. 2d Lieutenant, Squad 40, Aviation Barracks, Berkeley, Cal.
 Claude P. Hamilton, B.S., Sergeant, Co. D., 28th Engineers, Camp Dix, N. J.
 Lester P. Harriman, B.S., Farming, Elko.
 Charles R. Hilton, B.S., 2nd Lieutenant, Searchlight Company, Wilmington, Delaware.
 Carrie Edith Linsea, B.A. (Mrs. F. St. Cyr), Teacher, Vernon.
 Ward W. Lusk, B.S., 2d Lieutenant, Ordnance Department, Production Division, Harrisburg, Pa.
 Grace Mahan, B.A., 73 High Street, Reno. Teacher, Reno Public Schools.
 J. Blair Menardi, Jr., Ensign, U. S. S. "Golden Gate," San Francisco, Cal.
 Carl Milentz, B.S., Business, Rock Island, Texas.
 Myrtle Neasham, B.S. (Mrs. Philip Raymond), Placerville, Cal.
 Edwina J. O'Brien, B.A., Sparks. Teacher, Sparks Schools.
 Earl T. Ross, M. A., Elko. Sergeant Q. M. N. A.
 Clara Smith, B.A. (Mrs. J. O. Beatty), Imlay.
 William I. Smyth, B.S., Mining Engineer, Rochester.
 Alice Van Leer, B.A. (Mrs. Lester P. Harriman), Elko.
 William Clarke Webster, B.S., 1734 Van Ness Avenue, Los Angeles, Cal. 2d Lieutenant, 22nd Machine Gun Battalion, American Exped. Force.
 Nathaniel D. Wilson, B.S., 123 Maple Street, Reno. Member of firm N. E. Wilson, Drug Company. 31st Service Co., Signal Corps, Radio Div., Barracks B., College Park, Maryland.

Clerimond Withers, B.A. (Mrs. Edward Haug), Schurz.
Henry Wolfson, B.A., Box 413, Reno.
1st Lieutenant, A. P. O., 727 American Exped. Force, France. Statistical Division.

CLASS OF 1915

Elmore S. Abbott, B.S., with Holt Manufacturing Co., Stockton, Cal.
Mabel Routh Akin, B.A., Teacher, Girard, Kansas.
Thomas F. Banigan, B.S., Chemist, Hercules Powder Co., Wilmington, Delaware.
Dorothy Jane Bird, B.A.; M.A. (Mrs. J. A. Nyswander), Reno.
Ethel Brown, B.A. (Mrs. W. S. Carter), Austin.
John I. Cazier, B.S., Stockman and rancher, Wells.
Gel Coe, B.S. Last address Fallon.
Phillip S. Cowgill, B.S., Field Engineer for United Verde Copper Co., Jerome, Arizona.
Carna H. Damm, B.A. (Mrs. F. N. Dondero), 942 Sierra Street, Reno.
Delwyn Dessar, B.S., Captain, F. A. R. C. 6th Battalion, Camp Zachary Taylor, Kentucky.
Veronica Dickey, B.A., Sparks. Teacher.
Gladys E. Fraser, B.A., Sparks. Teacher.
Jessie Hylton, B.A., Hylton.
Ira L. Kent, B.S., Fallon. Private 42nd Co., 11th Battalion American Exped. Force.
*George Latapie, B.S., Civil Engineer. *1916.
Laurena Marzen, B.A., Teacher, High School, Truckee, Cal.
Marjorie Mead, B.A., Teacher, Fallon.
P. A. McCarran, M.A., Chief Justice, Supreme Court, Carson City.
George L. McCreery, B.S., Yerington. 2d Lieutenant, Infantry, Camp Pike, Arkansas.
Joseph F. McDonald, B.S., Press writer, Evening Gazette, Reno.
Peter G. McKinley, B.S.; E.E., 1917. Instructor in Mechanical Engineering, University of Nevada. Lieutenant (J.G.) U. S. Naval Reserve Forces, U. S. S. "Frederick." New York City.
Harvey McPhail, B.S. Address not known.
Harper C. Neeld, B.S. Address not known.
George Oglivie, B.S., Lee.
Adelbert Pfaffing, B.S., with Wells Fargo Company, Reno.
Blanche Chrisman Preston, B.A. (Mrs. A. W. Preston), Reno.

Philip Raymond, B.S., Placerville, Cal. 2nd Lieutenant, 60th Engineers, American Exped. Force.
Ida Lysle Rushby, B.A. (Mrs. Archle Trubert), Jersey City, New York.
Gertrude Shade, B.A., 203 Mill Street, Reno. Teacher, Reno Public Schools.
Richard Sheehy, B.S., 1450 Washington Street, Apt. 5, San Francisco, Cal. Private, Signal Corps.
Pearl Stinson, B.A., 428 Sinclair Street, Reno. Teacher, Reno Public Schools.
Earl Swain, B.S., Ensign, Brooklyn Navy Yards, Brooklyn, N. Y.
Thomas P. Walker, B.S., 2d Lieutenant, Signal Service Corps, 2d Field Battalion, American Exped. Force.
EuLella Lane White, B.A. (Mrs. Wilfrid L. Wylie), 2818 Telegraph Avenue, Oakland, Cal.
Elmer G. Wiley, B.S., Wellington.
Josephine G. Williams, B.A., 202 Maple Street, Reno.
Theodore Lyster Withers, B.A., 556 Marsh Avenue, Reno. 2d Lieutenant, Coast Artillery, Fortress Monroe, Virginia.

CLASS OF 1916

David Denlo Abel, B.S., Paradise Hill. Private, Artillery, Camp Taylor, Kentucky.
James Constable, B.S., 518 E. 6th Street, Reno. With Gen. Elec. Co., Schenectady, New York.
Fulro N. Dondero, B.S., 96 Winter Street, Reno. Private, 10th Co., 3rd Battalion, 166 Depot Brigade, Camp Lewis, Washington.
Vivian Engle, B.A. (Mrs. J. W. Pearson), 1160 Clay Street, San Francisco, Cal.
Frank C. Fake, B.S., 1634 25th Avenue, Oakland, Cal. Private, N. A. R. C., Massachusetts Institute of Technology, Boston, Massachusetts.
John Leslie Hancock, B.S., 64 Washington Street, Reno. Cadet, R. O. T. C., Camp Kearney, Cal.
Albert Jackson, B.S., Captain, Coast Artillery, Fort Hancock, New Jersey.
Leslie E. Johnson, B.S., Farming, Wells.
Vera E. Lemmon, B.A. (Mrs. Louis Hermann), Oakland, Cal.
Mary M. Leon, B.A. (Mrs. Waterfield Painter), Packard.
Edith Mack, B.S. (Mrs. Leslie Johnson), Wells.
H. T. McQuilston, B.S., Chico, Cal. Cadet, R. O. T. C., Camp Kearney, Cal.

h Miller, B.A., 745 N. Center Street, Reno. Secretary, Veterinary Department, University of Nevada.
 h Murray, B.A., 24 E. Fourth St., Reno.
 ert Ostroff, B.A., Interne, Lane Hospital, San Francisco, Cal.
 terfield Painter, B.S., Mining Engineer, with Packard Mines, Packard.
 k W. Pearson, B.S., with General Electric Company, San Francisco, Cal.
 Powers, B.A., 339 First Street, Reno. Teacher, Reno Schools.
 liam Powers, B.S., Farming, Fallon.
 rry Raitt, B.A., Sparks.
 arles P. Reilly, B.A., Tracy, Cal.
 ford D. Riley, B.S., Ranching, Yerington.
 na Sienaff, B.A., 317 Maple Street, Reno.
 hie Trabert, B.S., with General Electric Company, New York, N. Y.
 e F. Trout, M.A. (Mrs. W. D. Trout), St. Anthony, Idaho.
 rence White, B.S., Chemist, with Government Laboratories, Papillon, H. I.
 el Winger, B.A., Principal, Public Schools, Midas.
 orgianna M. Young, B.A., Teacher, High School, Elko.

CLASS OF 1917

yne B. Adams, B.S., 1107 Riverside Avenue, Reno. 2d Lieutenant, Infantry, American Exped. Force.
 h Barker, B.S., County Home Demonstrator, Smith-Lever Extension, Gardnerville.
 n Isabelle Bertschy, B.A., 821 N. Center Street, Reno.
 ix Borzynski, B.S., 2d Lieutenant, Post Headquarters, Kelley Field No. 1, San Antonio, Texas.
 ster Brennan, B.A., Elko. Teacher, High School, Sparks.
 dner Chism, B.S., Chism Ranch, Reno. 2d Lieutenant, Infantry, Replacement Camp, Georgia.
 es Constable, B.A., 518 E. Sixth Street, Reno.
 orie Cowgill, B.A., 305 Maple Street, Reno.
 rnerite Crotty, B.A. (Mrs. Thomas C. O'Connor), Lovelock.
 un Engle, B.S., Auburn, Cal., with U. S. G. S., Fallon.
 e Farrer, B.A., Gardnerville, Teacher.
 nita Frey, B.A., Gardnerville, Teacher.
 liam Fife, B.S., 219 Elm Street, Reno. 2d Lieutenant, Co. 28, 100 Battalion, Camp Lewis, Wash.

Jose Guevara, B.S. Address not known.
 Edith C. Harris, 661 Ralston Street, Reno.
 Edith S. Harris, 629 Lake Street, Reno.
 John W. Heard, Santa Cruz, Cal. 2d Lieutenant, 347 F. A. Battalion B, American Exped. Force.
 Dorothy Hempton, B.A., Teacher, Public Schools, Battle Mountain.
 Margaret Heuer, B.A., Teacher, Public Schools, Ely.
 Wilmer O. Hinkley, B.S., Care of Supervisor, U. S. N. R. F., Ferry Building, New York City. Lieutenant, U. S. S. "Zuiderdijk."
 Harry H. Hovey, B.S., Cadet R. O. T. C., Camp Fremont, Cal.
 Elsie Humphreys, B.A., 737 Lake Street, Reno.
 Carl D. Kemper, B.S., Auburn, Cal. Sergeant, Tank Corps.
 Margaret Kemper, B.A., Auburn, Cal.
 Thomas King, B.S., 4710 Cimarron Street, Los Angeles, Cal. 1st Lieutenant, 23rd Engineers, American Exped. Force.
 Marguerite MacIver, B.S. (Mrs. Lunsford Yandell), Poleta, Cal.
 Dorothy Mahan, B.S., 73 High Street, Reno. Secretary, U. S. Experimental Farm, Fallon.
 Charles H. Masters, B.S., with Zinc Company, Ltd., Notre Dame des Agnes de Montauban, Portneuf Co., Quebec.
 Ruth McKissick, B.A., McKissick Hotel, Reno. Clerk, Reno National Bank.
 Dorothy Morrison, B.A. (Mrs. R. L. Gibson), Gibson Apartments.
 William Pennell, B.S., 849 N. Virginia Street, Reno. Private, 20th Engineers, American Exped. Force.
 Ruth Pyle, B.A. (Mrs. Thos. P. Walker), 506 West 113th Street, New York City, N. Y. Secretary and Organizer, Girls, Patriotic League.
 Helena Shade, B.A., Resident Secretary, Y. W. C. A., University of Nevada, Reno.
 Frank Silva, B.S., 2d Lieutenant, 4th Regiment, Aviation Camp, Waco, Texas.
 Dorris Taylor, B.A., 336 East Street, Reno.
 Eva Walker, B.A., Teacher, High School, Elko.
 Wilfrid L. Wylie, B.A., with Union Oil Company, San Francisco, Cal. 2818 Telegraph Avenue, Oakland, Cal.

CLASS OF 1918

Elizabeth D. Bailey, B.A., 547 Ralston Street, Reno.

- Jean Magdalena Bertschy, B.A., 821 N. Center Street, Reno.
 F. L. Bixby, C.E., Engineer, in charge Irrigation Investigations, U. S. D. A., University of Nevada, Reno.
 Howard E. Browne, B.A., 53 Park Street, Reno. Private, Draft Army, Camp Fremont, Cal.
 Myrtle Cameron, B.A., 905 W. Second Street, Reno. With Reno Power, Light and Water Company.
 Georgia Damm, B.A., Lovelock.
 Donna Dyke, B.A., Lovelock. Teacher, Las Vegas Schools.
 Augusta Curler Finney (Mrs. Lynn Finney), Elko.
 Grace Anita Fuss, B.A., Lovelock.
 Lia Submit Harnias, B.A., New York City, New York.
 Alice A. Hobblins, B.A., 829 N. Virginia Street, Reno.
 William T. Holcomb, B.S., Private, Camp A. A. Humphreys, Accotink, Virginia.
 Alonzo Cheney Wilber, B.S., 945 Nevada Street, Reno.
- Robert Lyle Kimmel, B.A., Sparks. News writer with Reno Evening Gazette.
 Elmer Knight, B.S., Grass Valley, Cal. Private E 5 Gun Sheds, Fort Riley, Kansas.
 Blanche Lothrop, B.A., 1801 I Street, Sacramento, Cal.
 Helen E. Mace, M.A., Azusa, Cal. Teacher, Las Vegas Schools.
 Faith Maris, B.A., Manhattan.
 Adele C. Norcross, B.A. (Mrs. Edwin Bender), Pensacola, Florida.
 Stanley J. Pargellis, B.A., Y. M. C. A., Reno. Cadet, Specialists' School, Fort Winfield Scott, Cal.
 Elrod Pohl, B.S., Ensign, U. S. Navy. 505 York Street, Vallejo, Cal.
 Laura M. Rains, B.A., 415 N. Virginia Street, Reno.
 Hulda Shartel, B.A., Lake City, Cal. With Reno Power, Light and Water Co., Reno.
 Emma Lou Singer, B.A., Goldfield.

HONORARY DEGREES

- Rev. Chas. F. Aked, Honorary LL.D., 1913. San Francisco, Cal.
 Mrs. Rose Viola Stewart Berry, Honorary M.A., 1907. Oakland, Cal.
 Judge Azro E. Cheney, Honorary LL.D., 1908. 235 S. Virginia Street, Reno.
 *Hannah K. Clapp, Honorary M.A., 1888. *1908.
 *Mrs. Mary W. Emery, Honorary M.A., 1895. *1916.
 Judge Edward S. Farrington, Honorary LL.D., 1908. Carson City.
- George Brinton McHarvey, Honorary LL.D., 1908. Harper Publishing Company, Franklin Square, N. Y.
 Mrs. Katherine Mackay-Blake, Honorary M.A., 1908. Paris, France.
 Frank H. Norcross, Honorary LL.D., 1911. 701 Lake Street, Reno.
 Rev. Charles Adolph Ramm, Honorary LL.D., 1908. San Francisco, Cal.

SUMMARY OF ALUMNI

Alumni living.....	540
Alumni deceased	29
Honorary Alumni living.....	8
Honorary Alumni deceased	2
Total	579

INDEX OF ALUMNI

Names of deceased Alumni are in *italic*

A

1915 Abbott, Elmore Stuart
 1901 Abel, James F..
 1916 Abel, David Denio
 1917 Adams, Wayne
 1913 Aked, Rev. Chas. F. (Honorary)
 1915 Akin, Mabel Routh
 1901 Alexander, Wallace D.
 1903 Allen-Fenstermaker, Carrie
 1902 Allen-Haworth, Leona
 1902 Anderson, George
 1913 Anderson, Morris D.
 1912 Anderson, Walter W.
 1906 Arms-Jacks, Mary E.
 1903 Arms, Miranda Ray
 1902 Arnot, *Edwin P.*
 1904 Arnot-Leavitt, Laura
 1900 Arnot-Rice, Mary E.
 1901 Ayers, Irwin W.

B

1905 Bacon-Chism, Mary
 1918 Bailey, Elizabeth Doris
 1915 Banigan, Thomas F.
 1912 Barber, Elda Marlon
 1914 Barber, Nell K.
 1903 Barker, Frank
 1892 Barney, William E.
 1917 Barker, Leah
 1893 Bell, Agnes
 1901 Bender-Worn, Kate C.
 1910 Bennett, Clayton A.
 1911 Bennett, Ellsworth R.
 1903 Berry-Terron, Emily
 1907 Berry, Mrs. Rose Viola Stewart
 (Honorary)
 1900 Berry, William Frank
 1917 Bertschy, Ellen Isabel
 1918 Bertschy, Jeanne Magdalena
 1910 Bird, Donald M.
 1915 Bird-Nyswander, Dorothy Jane
 1907 Blake-Williams, Florence
 1904 Blakeslee-Hughes, Mabel H.
 1897 Bliss, George Russell
 1895 Blum-Blaney, Louise
 1901 Bonham, Fenton A.
 1897 Bonham, Jessie Gertrude
 1917 Borzynski, Felix
 1896 Boyd-Durkee, Adelaide
 1899 Boyd, Delle
 1899 Boyle, Emmet D.
 1905 Bradley, Dean F.
 1903 Bradshaw, Marcus G.
 1897 Brambila, Robert M.
 1896 Brandon, William
 1905 Brannin-Davis, Lucy R.
 1911 Bray, Florence L.
 1902 Bray, John Carl

1917 Brennen, Chester Allyn
 1891 *Bristol, Frederick Amos*
 1899 *Bristol, John James*
 1912 Brown, Charles Leroy
 1893 *Brown, Charles Peleg*
 1915 Brown-Carter, Ethel E.
 1899 Brown, Thomas Pollock
 1918 Browne, Howard Edgar
 1912 Bruce, Daniel Eldred
 1898 *Bruette-Ward, Maud Vera*
 1899 *Bruette, Nelson*
 1900 Brule, William Henry
 1905 Bulmer, Halbert B.

C

1913 Cagwin, Eunice
 1896 Cahlan, Albert W.
 1893 Calne, Edwin E.
 1899 Calne-Martinez, Gertrude
 1912 Cameron, Donald C.
 1904 Cameron-Rhodes, Jeanette
 1902 Cameron, John D.
 1918 Cameron, Myrtle
 1907 Carpenter, Jay A.
 1906 Case, John S.
 1902 Case, Seymour
 1904 Catlin, William Prince
 1904 Caton, Albert J.
 1906 Cazler-Franklin, Helen H.
 1906 Cazler, Henry H.
 1915 Cazler, John I.
 1913 Charles, William Mortimor
 1908 Cheney, Judge Azro E. (H
 orary)
 1917 Chism, Gardner L.
 1905 Chism, Harry C.
 1899 Chism, John
 1902 Church, Mrs. Florence H.
 1888 *Clapp, Hannah K.* (Honorary)
 1911 Cleator, Cora
 1906 Clemons, Jay H.
 1915 Coe, Gel
 1907 Coll-McFadden, Edna
 1910 Colyer, Lydia
 1904 Comerford, James V.
 1917 Constable, Agnes
 1916 Constable, James, Jr.
 1905 Cooke-Saxton, Mary Elizabeth
 1910 Conkey-Frey, Irene M.
 1908 Cowgill-Miller, Alberta A.
 1917 Cowgill, Marjorie
 1915 Cowgill, Philip
 1914 Cozzallo, Anne P.
 1911 Creel, Cecil Willis
 1917 Crotty-O'Connor, Marguerite
 1900 Culp-Sheffield, Lulu O.
 1910 Curnow, George
 1907 Curran, Andrew C.
 1891 Cutting, Henry C.

D

05 Damm-Dondero, Carna H.
 08 Damm, Georgia C.
 03 Davey, Lillian H.
 07 Davidovich, Milan
 02 Davis, Blanche
 08 Davis, John Newman
 01 Davis-Curry, Vera Stuart
 03 DeFlon, Marie
 05 Dessar, Delwyn
 04 Delongchamps, Fred J.
 00 *Derter, Harry H.*
 05 Dickey, Mary Veronica
 08 *Doane, Arthur V.*
 00 Dodd-Young, Charlotta
 03 Donahue, Mildred
 06 Dondero, Fuiro Nicholas
 00 Dopson-Rullison, Isadore
 03 Dorn, Norman L.
 00 Doten, Alfred
 02 *Doten, Goodwin Stoddard*
 08 Doten, Samuel Bradford
 06 Drake, Frank
 08 Duffy, Dennis M.
 00 Dunsden, Nathaniel
 05 Durkee, Joseph
 03 Durkee, Samuel C.
 08 Dyke, Donna

E

04 Ede, Allen S.
 01 Ede-Wulschleger, Irene
 08 Ede, Leonard Greeley
 07 Edmunds-Sauer, Alice Emily
 07 Edmunds, Amy Gertrude
 08 Elam, Anna Sophia
 05 *Emery, Mrs. Mary Whitesides*
 (Honorary)
 07 Engle, Glenn F.
 06 Engle-Pierson, Vivian
 03 Erickson, Edward J.
 03 Esden, Lillian E.
 04 Evans, Leslie
 04 Evans, Ben Allen
 02 Evans-Robinson, Elizabeth
 07 Evans, John N.
 08 Everett, Wilbur S.

F

06 Fake, Frank Clement
 02 Farrer, Robert
 07 Farrer, Elsie D.
 08 Farrington, Judge Edward S.
 (Honorary)
 07 Feeney, Martin A.
 08 *Ferguson, David*
 07 Fife, William
 08 Finlayson, Donald R.
 08 Finney, Mrs. Augusta Curler
 05 Flood, Albert J.
 05 Flood, Winfield J.
 00 Foss, Marion H.
 05 Frandsen, Peter
 05 Frazer, Gladys E.
 00 Frazer, Robert H.
 08 Freeman, Fred J.

1894 Frey, Frederick C.
 1917 Frey, Juanita
 1908 Frey, Laurence J.
 1896 Frey-Sadler, Louise
 1913 Frisch-Holmes, Emma E.
 1910 Fulton, Helen
 1898 Fulton, John A.
 1918 Fuss, Grace Anita

G

1908 Gallagher, Hugh J.
 1900 Gault, Daniel W.
 1908 George, Edward T.
 1904 Gibson-Chester, Agnes Pearl
 1913 Gignoux, Frank C.
 1900 Gignoux, Raymond J.
 1912 Gilcrease, Leonard
 1912 Glass-Barch, Rowena E.
 1906 Goble-Weathers, Alma
 1897 Godfroy-Longley, Victoria
 1910 Goldsworthy, Wm. H.
 1907 Goldstein, L. H. (see Golton).
 1907 Golton, Louis H.
 1899 Gregory, John M.
 1902 Grey, Blaine
 1900 Grimes-Burton, Lucy
 1917 Guevera, Jose

H

1902 Hall-David, Florence R.
 1901 Hall, Joseph W.
 1914 Hamilton, Claude
 1906 Hamlin, Alfred S.
 1916 Hancock, John Leslie
 1905 Hand-Luke, Catherine
 1911 Hanser, Hugo
 1896 *Hansen, Andrew*
 1900 Hardach, Edward E.
 1918 Harniss, Lia Submit
 1914 Harriman, Lester P.
 1903 Harrington, Walter Burt
 1917 Harris, Edith C.
 1917 Harris, Edith Simpson
 1911 *Harris, Walter Cameron*
 1907 Hart, James
 1908 Harvey, George Brinton Mc.
 (Honorary)
 1911 Hash-Holcomb, Vera E.
 1913 Hauss-Anderson, Lena
 1901 Hayes, William L.
 1900 Hays, David W.
 1917 Heard, John Williamson
 1911 Helse, Henry
 1917 Hempton, Dorothy
 1912 Henderson, Virgil M.
 1896 *Henry, John M.*
 1906 Hershisser-Hymer, Beulah
 1903 Hesson, Robert W.
 1917 Heuer, Margaret E.
 1898 Hickey-Hughes, Loretto
 1913 Higgins-Hendel, Helen Brelsford
 1897 Higgins, Jerome B.
 1914 Hilton, Chas R.
 1917 Hinkley, Wilmer O.
 1896 Hironymous-Dunberg, Gertrude
 1918 Hobbins, Alice Crawford

1911 Hobblins, Frank
1912 Hobblins, Helen R.
1906 Hofmann, Gustav E.
1918 Holcomb, William T.
1912 Holmes, August
1900 Holmes-Hays, Ida M.
1910 Homer, Dudley D.
1911 Horn, John S.
1917 Hovey, Harry H.
1917 Humphrey, Elsie L.
1915 Hylton, Jessie G.

J

1916 Jackson, Albert M.
1906 Jameson, Curry
1902 Jameson, Harry
1900 Jameson, Scott
1912 Jepson, Mathilda
1911 Jepson, Melvin E.
1903 Johnson-Bracken, Anna
1916 Johnson, Leslie Eugene
1913 Jones, Bertha
1906 Jones, Harry L.
1900 Jones, John B.
1912 Joy, Helena A.
1899 Jullen, Louise A.

K

1908 *Kane-West, Mary June*
1907 Kearney, William M.
1898 Keddie-Palmer, Helen
1901 Keddie, William A.
1903 Kelley, Arthur L.
1905 Kelley, Mark M.
1917 Kemper, Carl D.
1917 Kemper, Margaret
1907 Kennedy, Miles B.
1903 Kent-Wallace, Florence V.
1915 Kent, Ira L.
1899 Keyser, Charles P.
1918 Kimmel, Robert Lyle
1917 King, Thos. R.
1908 Kline, Louis F.
1906 Knemeyer, Bertha
1918 Knight, Elmer
1901 Kornmayer, Frank
1901 Kruger, Tillie V.

L

1897 Lachman, Edmund D.
1909 Lake, Winfield S.
1912 Langwith, Margaret A.
1910 *Larcombe-McKenzie, Hazel P.*
1915 *Latapie, George A.*
1899 Lawrence, Thomas J.
1911 Layman, Randall B.
1902 Leadbetter, Benj. C.
1903 Leadbetter, Even Percy
1900 *Leavitt, George Allen*
1907 Leavitt, James D.
1910 Leavitt, Louis S.
1916 Lemmon-Hermann, Vera Ella
1916 Leon-Painter, Mary Maude
1903 Levy, Dorothy
1892 Lewers, Albert M.
1893 Lewers, Charles R.

1898 *Lewers, Ellen R.*
1913 Lewis-McDonald, Leola
1899 Libby, Jason M.
1896 Linscott, Fred M.
1895 Linscott, Stella
1911 Linton, William Donald, Jr.
1914 Linsea-St. Cry, Edith
1899 Longley, Alfred L.
1918 Lothrop, Blanche Teresa
1903 *Luke, Frank H.*
1898 Luke, William J.
1913 Lusk, Ward W.

M

1911 McBride, Bonfield
1915 McCarran, P. A.
1903 McClintock, Saxe M.
1902 McCormack, Elizabeth
1915 McCreery, George L.
1906 McDermott, Laura
1915 McDonald, Joseph F.
1910 McKenzie, Clyde S.
1915 McKinlay, Peter G.
1917 McKissick, Ruth
1906 McManaman, Wilson
1910 McMullen-Hurley, Lulu B.
1909 McNair, Georgia A.
1915 McPhall, Harvey F.
1916 McQuiston, H. T.
1903 McVicar, James
1917 MacIver-Yandell, Marguerite
1918 Mace, Helen Elizabeth
1896 Mack, Arthur P.
1916 Mack-Johnson, Edith
1916 Mack, Effie M.
1910 Mack, Ernest Deal
1910 Mack-Fisher, Irene M.
1903 Mack, Joseph P.
1910 Mack, Margaret E.
1899 Mack, Thomas W.
1899 Mackay-Blake, Mrs. Katherine
(Honorary)
1913 Mackay, E. Reay
1894 Magill, Charles
1897 Magill, John R.
1917 Mahan, Dorothy
1914 Mahan, Grace
1918 Maris, Faith
1894 Martin, Anna H.
1906 Marzen-McBride, Ethel L.
1915 Marzen, Laurena A.
1908 Massey, William H.
1917 Masters, Charles Ford
1901 Maxwell, Agnes J.
1906 Maxwell, Alice H.
1905 Mayberry, Marguerite E.
1901 Mayer, Charles G.
1902 Mayhugh, John S.
1911 Mead-Bradner, Agnes
1915 Mead, Marjorie
1914 Menardi, J. B.
1908 Mihills, Melvin E.
1914 Milentz, Carl A.
1909 Millar-Kemp, Isabel
1910 Millar, James A.
1916 Miller, Ruth

01 Moran, Wm. J.
07 Morrison-Gibson, Dorothy A.
06 Morse, Ada E.
08 Murphy-Litster, Rosalia
06 Murray, Ruth
11 Myers, Alfred

N

08 Nadon, Joseph A.
01 Nash-Tranter, Maude E.
04 Nathan, Fred
14 Neasham-Raymond, Myrtle
15 Neeld, Harper C.
06 Nesbitt, James
18 Norcross-Bender, Adele Cutts
08 Norcross, Charles A.
01 Norcross, Frank H.
00 Norris, William F.
01 North-Ambur, Amella M.
15 North, Mary E.
01 North, Ruby
15 North, William H.

O

00 O'Brien, Alice W.
04 O'Brien, Edwina
06 O'Brien, W. J.
15 Ogilvie, George F.
03 O'Hara, Bernard
00 Ohmert-Ohmart, Audrey
02 Ohmert, Hazel M.
07 O'Leary, Francis R.
00 O'Neill-Lyons, Mary E.
15 O'Neill, William J.
02 Orr, Laura B.
15 Osburn, Ralph L.
08 Overman-Hart, Eliza H.
09 Owaku, Ihel

P

06 Painter, Waterfield
09 Palmer, Stanley G.
06 Palmer-Tilley, Mae
15 Palmer, Walter S.
08 Pargellis, Stanley M.
07 Parker-Powers, Amy J.
00 Parker, Frances Dorothy.
09 Parker-Walts, Martha M.
03 Patrick, Lloyd B.
02 Pearson, Edgar Ford.
06 Pearson, Jack Walter
15 Pearson, Will
03 Peckham, James G.
07 Pennell, William
07 Peterson, Frank L.
06 Peterson, Harriett Irene
15 Pflaging, Adelbert
08 Phillips-Dawson, Sadie.
01 Pike-Layman, Gertrude
04 Plumb-King, Mabel
08 Pohl, Elrod
09 Pohl, Louise M.
15 Pope, William
06 Powers, Emmet A.
07 Powers, George D.

1916 Powers, Ina H.
1916 Powers, W. M.
1915 Preston, Mrs. Blanche C.
1904 Price, James H.
1908 Prouty, Anna E.
1917 Pyle-Walker, Ruth Ann

Q

1902 Quinn, Patrick J.

R

1918 Raines, Laura Mercedes
1916 Raitt, Mary Josephine
1908 Ramm, Rev. Charles Adolph
(Honorary)
1900 Rammelkamp-Masterson, Clara A.
1903 Rammelkamp-Kirkwood, Elsa-
beth
1904 Rammelkamp-Masterson, Georgia
1915 Raymond, Philip E.
1912 Reed-Schraps, Florence
1909 Reed-Robinson, Mabel L.
1916 Reilly, Charles Phillip
1897 Riegelhuth, Katherine
1913 Reynolds, Arthur I.
1899 Richard, George Raymond
1901 Richard, Leroy L.
1903 Richardson-Bishop, Mabel
1916 Riley, Linford Dale
1913 Robb, Raymond F.
1909 Roedder, Charles D.
1900 Rousseau, Bessie
1914 Ross, Earl T.
1909 Ross, Sillas E.
1910 Rossi, Nicholas L.
1915 Rushby-Trabert, Ida Lysle
1908 Ryan, Frank

S

1901 Sadler, Alfred R.
1907 Sawyer, Robert W.
1910 Sawin-Taylor, Maude A.
1895 Saxton, Frank H.
1900 Skinner-Degman, Frances A.
1894 Schadler-Wardin, Anna M.
1901 Schadler, August H.
1903 Schoer, Claude P.
1912 Schraps, Paul C.
1912 Schuler-Spencer, Isabelle
1909 Schuler, May
1907 Scott, Joseph D.
1910 Sears, John E.
1912 Seaton, Roland M.
1899 Seagrave, David C.
1896 Seagrave, William H.
1913 Settlemeier, William H.
1915 Shade, Gertrude
1917 Shade, Helena
1918 Shartel, Eleanor Hulda
1915 Sheehy, Richard
1899 Sherman-Keyser, Almee A.
1906 Sielaff, Alwine
1900 Sielaff, Gustav
1916 Sielaff, Selma
1917 Silva, Frank

1909 Slinger, Dorothy E.
 1918 Singer, Emma Lou
 1906 Smiley, John A.
 1913 Smithers, Thomas McC.
 1900 Smith, Alfred M.
 1913 Smith-Gignoux, Alice Wilhelmina
 1905 Smith, Cassius C.
 1914 Smith-Beatty, Clara I.
 1896 Smith-Adamson, Laura
 1905 Smith, Claude L.
 1914 Smyth, William I.
 1907 Snapp-Farrell, Mabel
 1903 Snapp-Whitaker, Pearl
 1909 *Snare-DeArmond, Reba O.*
 1905 Souchereau, Obeline
 1902 Southworth, Harford C.
 1911 Spark, Clinton W.
 1901 Sparks-Siders, Ethel V.
 1912 Spencer, Raymond
 1895 Stanaway-Briggs, Alice Mabel
 1905 Stark, William C.
 1892 Stadtmuller, Frederick
 1906 Standerwick, Harry M.
 1897 Start, Harry A.
 1913 Stebbins, Lee W.
 1905 Steckle, Abram H.
 1903 Stewart, Elbert
 1907 Stewart, Fred B.
 1894 Stewart, Harry E.
 1893 Stiner, Ina H.
 1915 Stinson, Pearl
 1901 *Stubbs, Donald P.*
 1899 Stubbs-True, Elizabeth S.
 1901 Stubbs, Ralph S.
 1895 Stubbs-Fulton, Theodora W.
 1898 Sullivan, John J.
 1898 Sunderland, John
 1898 Sunderland-O'Sullivan, Katherine
 1915 Swain, Earl H.
 1893 Swan, Smith

T

1899 Tally, Robert
 1903 Taylor, Alfred
 1917 Taylor, Dorris L.
 1901 Taylor, William L.
 1912 Teel, Claude
 1912 Thompson-Zimmer, Ethel R.
 1904 Thompson, Frank P.
 1898 Thompson, John W.
 1898 Thompson-Dimmick, Maude
 1904 Thompson, William
 1912 Tibbals, Carl L.
 1901 Tobin, Richard C.
 1916 Trabert, Archie
 1897 Tredway-Kaiser, Susie M.
 1916 Trout, Mrs. Alice Frances

U

1906 Updike, Daniel H.

V

1914 Van Leer-Harriman, Alice

W

1917 Walker, Eva Anna
 1915 Walker, Thomas P.
 1896 Walts, Fred E.
 1898 Walts, Guy
 1896 Ward, Albert W.
 1901 Ward, David S.
 1895 Ward, Grace V.
 1899 Ward-Donohue, Louise G.
 1907 Weathers, Leland Stanford
 1903 Weathers-Flickinger, Olive E.
 1914 Webster, Clarke
 1902 Webster, Elizabeth
 1906 Weeks-Standerwick, Sadie J.
 1907 Weddle, Walter E.
 1908 Westall, Alfred H.
 1904 West, George F.
 1896 Wheeler-Senseny, Mildred Maude
 1903 Whitaker, Fred W.
 1915 White-Wylie, EuLella
 1913 White, Florence
 1911 White, Harriet H.
 1916 White, Henry Laurence
 1918 Wilber, Alonzo Cheney
 1915 Wiley, Elmer G.
 1911 Williams, Edwin E.
 1899 *Williams, Enid M.*
 1909 Williams, Homer L.
 1903 Williams, Joseph A.
 1915 Williams, Josephine G.
 1896 Williams, Otto T.
 1913 Wilson, Joseph W.
 1914 Wilson, Nathaniel
 1916 Winger, Ethel
 1913 Winter, Bessie M.
 1913 Winter, Edith
 1905 Wise-Catlin, Ollie
 1914 Withers-Haug, Clerimond
 1915 Withers, Theodore Lyster
 1914 Wolfson, Henry
 1904 Woodward-Reid, Anna B.
 1905 Wright, John W.
 1904 Wright, Nathaniel D.
 1917 Wylie, Wilfrid Lamont

Y

1910 Yamauchi, George S.
 1907 Yamaguchi, Telko
 1909 Young-Goodin, Blanche N.
 1916 Young, Georgiana M.
 1902 Young-Donnenwith, Marian E.
 1909 *Young, Robert W.*

ALUMNI ADDRESSES WANTED

Information is asked for regarding the present addresses of the following, as correspondence with most of them sent to the last address on file at the University has been returned:

95 Mary E. North, Salt Lake City, Utah.	1904	Allen S. Ede, Los Angeles, Cal.
95 William H. North, Silverton, B. C.	1904	James H. Price, Reno.
96 May Palmer Tilley, Pine Grove.	1905	F. Dean Bradley, Reno.
97 Martin Feeney, San Francisco, Cal.	1905	William J. O'Neill, San Francisco, Cal.
97 Harry A. Start, Portland, Oregon.	1905	Alfred S. Hamlin, Dinuba, Cal.
98 John W. Thompson, Garfield, Utah.	1906	Laura McDermott, Hollister, Cal.
98 Nathaniel Dunsten, Independence, Cal.	1906	Wilson McManaman, Monrovia, Cal.
99 Jason M. Libby, Ray, Arizona.	1906	John A. Smiley, Santa Cruz, Cal.
99 T. J. Lawrence, Mexico.	1907	Fred Bruce Stewart, Lone Pine, Cal.
99 Louise Pohl, Tonopah.	1907	Walter E. Weddle, Los Angeles, Cal.
99 Mary Arnot Rice, Oakland, Cal.	1907	Teiko Yamaguchi, Reno.
99 Lulu Culp-Sheffield, Brooklyn, New York.	1908	John N. Davis, Blair.
99 John B. Jones, Sacramento, Cal.	1908	Frank J. Ryan, Caliente.
99 Amelia North-Ambur, Sparks.	1909	Ihei Owaki, Reno.
99 Ruby North, Salt Lake City, Utah.	1909	Chas. D. Roedder, Reno.
99 Tillie Kruger, Greenville, Cal.	1910	Nicholas L. Rossi, Templeton, Cal.
99 Charles G. Mayer, San Francisco, Cal.	1910	S. Yamauchi, Reno.
99 Blaine Grey, Reno.	1911	Cora M. Cleator, San Diego, Cal.
99 H. C. Southworth, Los Angeles, Cal.	1911	Marion H. Foss, Chicago, Ill.
99 Even P. Leadbetter, Pittsburgh, Pennsylvania.	1911	Hugo Hanser, Yerington.
99 Alfred T. Taylor, Eureka.	1912	Donald Cameron, Austin.
99 Saxe McClintock, Chewelah, Washington.	1912	Donald Linton, McGill.
99 Mabel Plumb-King, Mokelumne, Cal.	1912	Edwin E. Williams, Eureka, Cal.
	1913	Mildred Donohue, Bodie, Cal.
	1915	Harvey McPhall, Sparks.
	1915	Harper C. Neeld, Salt Lake City, Utah.
	1915	Gei Coe, Fallon.
	1917	Jose Guevara, Alamosa, Colo.
	1918	Alonzo C. Wilber, Reno.

NEVADA STATE NORMAL SCHOOL

REGISTER OF GRADUATES—1889-1918

This list includes the names of students who, on recommendation of the University of Nevada, through the State Normal School, have received teachers' certificates for the elementary schools. There has been no revised list of Normal graduates for several years as the Normal Alumni has not kept up its organization. Under these circumstances it is probable that more than the usual number of inaccuracies will be found. Corrections will be thankfully received, as well as any information concerning those whose addresses are unknown:

Edith Lyle, 1907. Last address, Elko, 1907.	Beck, Jessie Parker, 1897. Teacher, Reno Schools, 618 Sinclair St., Reno.
Frances Bell, 1894 (Mrs. T. C. Wogan), Sparks.	Benson, Mary Leah, 1902 (Mrs. S. C. Weeks, Jr.), Wells.
Mary, 1895 (Mrs. C. P. Richards), Reno.	*Benson, Nettie, 1897 (Mrs. Charles E. Gates). Died, Wadsworth, January, 1903.
Rena Palmer, 1893 (Mrs. Rena Stone), R. F. D. 1, Ogden.	Blake, Maude, 1897. Last address, Tonawanda, Elko Co., 1900.
Mollie, 1891 (Mrs. Thomas Kohler). Last address, Plamo, Cal. 1911.	Blevins, Dollie A., 1904 (Mrs. T. G. Williams), Deeth.
Blanche, 1890 (Mrs. C. E. Nagle), Ringold, Wash.	Blevins, Elvina, 1917, Deeth.
Hazel B., 1913, 746 N. Virginia St., Reno.	Blevins, Viola, 1912, Teacher, Goldfield.
Irene H., 1915 (Mrs. Chester E. Lonkey), Reno.	Blum, Josephine M., 1894 (Mrs. S. J. Weeks), Wells.
Laura, 1901 (Mrs. Edmund R. Simons). Died, Tacoma, Wash., November, 1912.	Bonnifield, Anna, 1907. Last address, Reedley, Fresno Co., Route 1.
Florence, 1899 (Mrs. John Holland), Lamolille.	Bradshaw, Carrie W., 1899 (Mrs. Carrie Blundell), 312 Sinclair St., Reno.
Jennie C., 1907 (Mrs. Herbert Bennett), Reno.	Bradshaw, Eva I., 1895 (Mrs. E. B. Posvar), 1656 Washington St., Denver, Colo.
Lalla M., one-year diploma, 1916; two-year, 1917, Marina, Cal.	Bradshaw, Gussie C., 1900 (Mrs. Gussie McGinnis), 391 Valencia St., San Francisco, Cal.
Lucile, 1916, Ogden, Utah.	Bradshaw, Minnie M., 1902, Teacher, Paradise.
Wanda, 1917, Las Vegas.	Bradshaw, Thelma, 1918, Bishop, Cal.
Helene, 1901, Teacher, Reno Schools, 418 Maple St., Reno.	Brandon, Donna L., 1916, Tonopah.
Mary Louise, 1901 (Mrs. J. J. Hoydar). Last address, Vancouver, Wash., 1911.	Brandon, Thos. A., 1895, Attorney, Winnemucca.
Annie E., 1898 (Mrs. N. Morgan), Virginia City.	Brewer, Alice E., 1898 (Mrs. William Gardner), Ruby Valley.
Leah, 1916, 431 W. Fourth St., Reno.	Brock, Jessie F., 1906. Last address, Ely, 1906.
Kate H., 1908 (Mrs. Stewart), Big Pine, Cal.	Brown, Adna, 1916 (Mrs. Elmer Orr), Yreka, Cal.
Edna V., 1911 (Mrs. Lawrence Enyart), San Jose, Cal.	Brown, Irene V., 1909 (Mrs. C. A. Bennett), Notre Dame des Anges, Quebec.
Eva Christine, 1915, Teacher, Tuscarora.	Brown, Myrtle Frances, 1918, Minden.
Edna W., 1900 (Mrs. J. K. Seaton). Registry Clerk, Postoffice, Reno.	Brusso, Augusta, 1912, Teacher, McDermitt.
Alice M., 1901. Last address, Sutro, 1901.	Buchanan, Bessie, 1902. Last address, Sparks, 1910.

- Buchanan, Virgil. 1902. Last address, Reno. 1910.
- Bunker, Minnie Ella. 1893. Last address, Stanislaus, Cal., 1893.
- Burke, Nellie P., 1918, Goldfield.
- Burnett, Hattie. 1917, Virginia City.
- Burns, Edith Catherine. 1918, Reno.
- Cahill, Alice A., 1903. Last address, Grantville, 1904.
- Campbell, Lillian A., 1896 (Mrs. Lee Murphey), Eagleville, Cal.
- Cannan, Rita Agnes, 1918, Goldfield.
- Carter, Ruth Elizabeth, 1917, Smith.
- Case, Frances, 1899, Paradise Valley.
- Catlin, Edna N., 1895 (Mrs. F. W. Baker), Sparks. Regent, University of Nevada.
- Cesmat, Adrienne Anne, 1918, Reno.
- Chase, Sarah. 1904, Teacher, Reno Schools, 630 Alameda Ave., Reno.
- Choate, Carrie C., 1899. Last address, Unionville, 1904.
- Choate, Clara C., 1898. Last address, Unionville, 1904.
- Christiansen, Corinne L., 1913 (Mrs. Stanley E. Tower), Reno.
- Clark, Mary Rose, 1891, Reno.
- Clayton, Geraldine, 1917, North Fork, Elko County.
- Cliff, Bertha E., 1910, Teacher, Carson City.
- Clow, Mary, 1890 (Mrs. John Newman), Reno.
- Colquhoun, Gladys E., 1917 (Mrs. W. Schooley), Yerington.
- Comerford, Alice, 1900, Teacher, Oakland, Cal.
- Conway, Maud Elva, 1909. Last address, Sweetwater, 1909.
- Conaway, Margaret, 1904. Last address, Caliente, 1904.
- Cozzallo, Lee Rose, 1915 (Mrs. Dewey Suggett), Lakeview, Cal.
- Crane, Helena Theresa, 1907 (Mrs. Earl T. Ross), Fort Winfield Scott, Cal.
- Creek, Ethel, 1917, Clerk, Nevada Packing Co., Reno.
- Crocker, Charlotte, 1897. Last address, Lewiston, Cal., 1911.
- *Crutcher, Hugh E., 1897. Died.....
- Curler, Mollie, 1912, Teacher, Elko.
- Dake, Frances I., 1909 (Mrs. Jos. Campbell). Last address, Genoa, 1909.
- Danin, Anna C., 1903 (Mrs. John Toedt), Lovelock.
- Daugherty, Maud, 1890, Teacher Commercial Subjects, Tonopah High School, Tonopah.
- Davey, Lillian, 1909, Grass Valley, Cal.
- Davis, Emma D., 1915, Principal Schools, Montello.
- Deitz, Florence J., 1890. Last address, Stockton, Cal., 1903.
- Delaney, Mamie G., 1898, Principal Elementary Schools, Smith.
- Dewar, Louise C., 1906, Teacher, Reno.
- Dickinson, Laura, 1912. Last address, East Walker, 1913.
- Doane, Amy C., 1905 (Mrs. George E. Verrill), Chico, Cal.
- Doulin, Pauline S., 1916, Carson City.
- Donohue, Anne K. (Mrs. Thos. Kaney). Last address, Virginia City, 1898.
- Donohue, Margaret, 1897. Last address, Yerington, 1900.
- Douglas, Maude Lillian, 1896 (Mrs. S. M. Sample), Oakland, Cal.
- Douglas, Ruth M., 1916, Teacher, Fallon.
- Dow, Grace, 1903. Last address, Michigan Bluff, Cal., 1903.
- Drown, Kate K., 1907, Teacher, Lee.
- Duffy, Agnes M., 1916, Goldfield.
- Duffy, Ella C., 1896 (Mrs. T. C. Malloy), Napa, Cal.
- Duncan, Pearl, 1911, Teacher, Reno Schools, 542 Ralston St., Reno.
- Dunlop, Hazel M., 1908 (Mrs. J. C. Durham), 719 Sierra St., Reno.
- Dyke, Donna, 1918, Lovelock.
- Ede, Cora May, 1892 (Mrs. B. O. Sellman), 433 Elm St., Reno.
- Ede, Stella, 1892 (Mrs. J. F. Brooks), San Jose, Cal.
- Edmunds, Marion, 1895 (Mrs. A. W. Cahlan), 815 N. Center St., Reno.
- Elliott, Eloise E., 1904 (Mrs. Elmer A. Kinney), Bridgeport, Cal.
- Engle, Vivian M., 1914 (Mrs. J. W. Pearson), 1160 Clay St., San Francisco, Cal.
- English, Christine J., 1908, Teacher, Elko.
- Erickson, Ione, 1902 (Mrs. Fred Black), Reno.
- Erlson, Astrid Cecelia, 1909. Last address, Dayton, 1911.
- Erwin, Mary Agnes, 1896 (Mrs. John Thompson), Elko.
- Evans, Louise Donohue, 1896 (Mrs. Geo. O. Sawyer), Pioche.
- Evans, Jessie W., 1907 (Mrs. L. L. Topper), Oakland Park Apartments, Oakland, Cal.
- Fanning, Martha C., 1897 (Mrs. W. J. Riley), San Francisco, Cal.
- Farley, Margaret, 1899. Last address, Long Valley, Cal., 1902.
- Finck, Adolphine, 1902 (Mrs. O. C. McCall), Deeth.
- Fitzgerald, Teresa Janet, 1900. Last address, Walkerville, Mont., 1911.
- Flannery, Clara A., 1909 (Mrs. Wesley Lewis), Fair Oaks, Cal.
- Flewellen, Bessie, 1897, Virginia City.
- Folsom, Ethel F., 1908 (Mrs. Geo. Curnow), Genesee, Cal.
- Folsom, Martha, 1917, Reno.
- Fowler, Hazel Belle, 1916, Gardnerville.
- Francis, Effa S., 1916, Panaca.
- Francis, Hazel, 1917, Lee.
- Fraser, Vernie, 1900 (Mrs. L. G. Wedekind), 128 Bell St., Reno.

- ey, Frances A., 1800, Teacher, Reno.
 berg, Neva M., 1914, Teacher, 611
 Eureka St., Reno.
 ss, Grace Anita, 1918, Lovelock.
 ss, Florence, 1907, Lovelock.
 lagher, Ida Lucille, 1915, Teacher,
 Jerome, Ariz.
 ling, Rose, 1897 (Mrs. James Day),
 Denver, Colo.
 rdon, Anne, 1918, Aurora.
 ild, Martha DeEtte, 1897 (Mrs. Har-
 old A. Dinsmore), Alton, Cal.
 ould, Zoe Alva, 1914. Died at Wa-
 buska, January, 1918.
 gory, Blanche V., 1908 (Mrs. Harold
 P. Aldrich), Fairview.
 sell, Lela, 1917, Midas.
 milton, Edith, 1914, Teacher, 622
 Surprise Ave., Reno.
 nlin, Eunice, 1904 (Mrs. A. B.
 Church), Sattley, Cal.
 nlin, Helen Hale, 1903 (Mrs. Chas.
 E. Kent), Stillwater.
 ock, Edna Bell, 1909 (Mrs. W. A.
 Hardy), Fernley.
 ock, Crebo, 1891, Hotel-man, Bat-
 tle Mountain.
 oley, Helena M., 1910, Teacher,
 Winnemucca.
 sen, Erastus, 1917. U. S. Army Ser-
 vice.
 sen, Lawrence, 1917, U. of N., Reno.
 ood, Maude E., 1899, Washoe Co.
 Bank, Reno.
 dwick, Alice A., 1906 (Mrs. Clyde
 Van Fossen), Sacramento, Cal.
 ley, Martha Lillian, 1902. Last ad-
 dress, Columbia, 1911.
 per, Jessie L., 1899 (Mrs. U. S. Dar-
 rah), Betteravia, Cal.
 per, Lucinda R., 1897 (Mrs. N.
 Grider), Big Pine, Cal.
 ington, Mary, 1917, 329 West St.,
 Reno.
 rison, Mabel E., 1909. Last address,
 Carson City, 1911.
 t, Louise Edith, 1900 (Mrs. F. J.
 Pyne), Carson City.
 t, Pearl, 1897 (Mrs. J. D. Doyle),
 Stockton, Cal.
 ervedell, Sadie M., 1900 (Mrs. Geo.
 Plummer), Yerington.
 erman, Helen S., 1914, 331 Ralston
 St., Reno.
 enreich, Francis R., 1916, Frank-
 town.
 inkle, Josephine A., 1909, Gard-
 nerville.
 ingsen, Emma C., 1909, Gardner-
 ville.
 ry, Margaret, 1901 (Mrs. P. J.
 Shea), 690 Elko Ave., Reno.
 tage, Amy, 1899 (Mrs. Harry W.
 Parker), Teacher, Tippet.
 ck, Grace T., 1897. Last address,
 Japan, 1912.
 Hicks, Gladys, 1918, 140 Ridge St.,
 Reno.
 Higley, Emma, 1908, 337 Ralston St.,
 Reno.
 Hill, Dora B., 1902, Verdi.
 Hill, Jennie, 1907 (Mrs. Arthur Nes-
 mith), Gardnerville.
 Hinch, Louise M., 1898, 1945 Lyon St.,
 San Francisco, Cal.
 Hinch, Martha L., 1900 (Mrs. R. B.
 Heinrichs), Carson City.
 Hinch, Stella M., 1907, Teacher, 517
 E. Sixth St., Reno.
 Hofer, Gladys K., 1916 (Mrs. O. G.
 Heltman), Sheridan.
 *Hogan, May F., 1898 (Mrs. A. B.
 McCreery). Died, San Jose, Cal.,
 July 6, 1906.
 Howe, Lotta S., 1899, Teacher, Yering-
 ton.
 Hubbard, Edith, 1913 (Mrs. Schilling),
 Constantia, Cal.
 Hunkin, Margaret Gertrude, 1918, Reno.
 Hurd, Edith F., 1896, Teacher, 339 W.
 First St., Reno.
 Hurff, Lora, 1900, Elmwood, Ill.
 Hymers, Margaret Blake, 1896 (Mrs.
 Chas. Campbell), 103 Keystone
 Ave., Reno.
 Jameson, Jennie V., 1894 (Mrs. Win-
 field J. Flood), Jerome, Arizona.
 Jensen, Kirstena Maren, 1909 (Mrs.
 A. V. Doane), Gardnerville.
 Jepson, Sofena, 1908 (Mrs. Robert
 Dempster), Gardnerville.
 Johnson, Emma E., 1908. Last address,
 Elko, 1908.
 Johnson, Thelma C., 1915, Teacher,
 Midas.
 Jones, Gladys, 1912. Last address,
 Wadsworth (Pyramid Reservation.)
 Jones, Gladys A., 1916, Teacher, Sunny-
 side.
 Jones, Lillian May, 1896 (Mrs. Henry
 McLeod), Mina.
 Jones, Juanita, 1913 (Mrs. Arthur G.
 Whittlesey), San Francisco, Cal.
 Jones, Vernie E., 1906 (Mrs.
 Ballantyne), Elko.
 Keith, Bessie G., 1907. Last address,
 Lovelock, 1911.
 Kelley, Isabelle M., 1898, Principal, Jef-
 ferson School, Butte, Montana.
 *Kelley, Josephine, 1896 (Mrs. J. A.
 Ascher). Died, Oakland, Cal., Janu-
 ary, 1914.
 Kelly, Josephine M., 1909 (Mrs. Geo.
 Morgan), Virginia City.
 *Kerby, Annette, 1903 (Mrs. Carl Stod-
 dard). Died, Reno, January, 1908.
 Kerby, Frances, 1900 (Mrs. Robert
 Ewing), Sparks.
 Kimmel, Lois Geneva, 1918 (Mrs. Geo.
 Meacham), Vallejo, Cal.
 King, Pheobe H., 1917, Rawhide.

- Kinney, Kate Frost, 1891 (Mrs. R. L. Robinson), Sparks.
- LaKamp, Ruth Hurd, 1918, Reno.
- Lamb, Florence L., 1899 (Mrs. Geo. M. Peacocke), 544 N. Center St., Reno.
- Lamberson, Lora Belle, Yerington, 1917.
- Lane, Mary Frances, 1891 (Mrs. Wm. O'Leary), Lovelock.
- Langwith, Eugenie, 1917, Winnemucca.
- LaValliere, Edith N., 1898 (Mrs. Frank Moran). Last address, 332 Jayne Ave., Oakland, Cal.
- Lawrence, Laura M., 1901 (Mrs. L. H. Hughes), Beckwith, Cal.
- Leehey, Veronica, 1907 (Mrs. J. E. Horgan), 709 S. Center St., Reno.
- Lemmon, Persia E., 1890 (Mrs. Chas. DuBurgh), Oakland, Cal.
- Leon, Mary Maud (Mrs. W. Painter), 1916, Tonopah.
- Lewis, Louisa, 1891, Postoffice, Ely.
- Light, Cora, 1891 (Mrs. Jesse Maxon). Last address, Sparks, 1911.
- Litch, Clara, 1893 (Mrs. B. F. Gibson), Puraer, Lassen Co., Cal.
- Little, Mary Louise, 1908 (Mrs. W. E. Butler), Reno.
- Lloyd, Marie Wilder, 1913, Teacher, 340 St. Lawrence St., Reno.
- Lodge, Lillian, 1901 (Mrs. Bert Stoker), Lovelock.
- Lounsbury, Minnie M., 1898. Last address, Reno, 1898.
- Lowry, Mrs. Florence J., 1917, Paradise Hill.
- Lowrey, Georgella, 1905. Last address, Richmond, Cal., 1909.
- MacIver, Marguerite, 1917, 145 Maple St., Reno.
- Mack, Anna Mae, 1916, 428 Hill St., Reno.
- Mapes, Katherine O., 1894 (Mrs. W. H. Fulton), Standish, Cal.
- Marks, Lila L., 1908 (Mrs. C. W. Goettingling). Last address, San Francisco, Cal.
- Markyell, Velma (Mrs. J. Hawley), Vallejo, Cal.
- Marshall, Mae, 1897 (Mrs. O. J. Foster), Capistrano, Cal.
- Martin, Josephine Luella, 1916, Reno.
- Martin, Mary, 1917, San Leandro, Cal.
- Marx, Emma N., 1898 (Mrs. Geo. C. Green), Ridge and Belmont Sts., Reno.
- Mason, Mrs. Ruth F., 1917, Genoa.
- *Mayberry, Katherine G., 1896. Died, Reno, August, 1899.
- Mayberry, Margaret M., 1892 (Mrs. Andrew Martin), San Diego, Cal.
- Mayhugh, Sylvia I., 1906 (Mrs. Charles F. DeArmond), Oakland, Cal.
- McCormack, Clara Mae, 1902 (Mrs. Frank Rogers).
- McDermott, Lucy, 1902, Berkeley, Cal.
- McFarlin, Jennie E., 1890 (Mrs. A. B. Edmonson), Santa Barbara, Cal.
- *McIntyre, Mattie, 1899. Died, 1903.
- *McLear, Edith, 1896 (Mrs. H. L. Nichols). Died, Reno, December, 1907.
- McMullen, Mattie, 1902 (Mrs. J. I. Hobson), Denver, Colo.
- McMullen, Rose, 1904. Teacher, Arthur.
- McNamara, Honor M., 1907 (Mrs. M. B. Kennedy), 120 W. Eighth St., Reno.
- McNamara, Mary Norine, 1911 (Mrs. Frank E. Miller), Blair.
- McNeill, Florence, 1908. Last Address, Tonopah, 1908.
- McVicar, Grace, 1914, Teacher, Yerington.
- McVicar, Mary Belle, 1908, Smith.
- Meffley, Alice, 1913, Teacher, 304 Walnut St., Reno.
- Merlaldo, Isabel A., 1911, Teacher, Eureka.
- Meyers, Annie V., 1903 (Mrs. J. Boyle). Last address, Beckwith, Cal., 1911.
- Mitchell, Leona, 1896 (Mrs. A. J. George). Last address, Carson City, 1911.
- Mitchell, Sadie, 1898 (Mrs. J. D. Lotrop), 1801 I St., Sacramento, Cal.
- Monahan, M. Elsie, 1910 (Mrs. George Harris), Virginia City.
- Montrose, Myrtle E., 1900 (Mrs. George Anderson), Carson City.
- Morgan, Beulah A., 1907, Teacher, 41 Nevada St., Reno.
- Morton, Adeline, 1890 (Mrs. F. H. Norcross), 701 N. Lake St., Reno.
- Mulcoy, Jennie, 1896 (Mrs. Jennie Smith). Teaching, Winnemucca.
- Murphy, Nellie, 1895. Last address, Sheridan Grammar School, San Francisco, Cal.
- Murray, Hazel C., 1917, 834 Bell St., Reno.
- Nay, Isabelle, 1900. Last address, San Jose, Cal.
- Nelligan, Florence J., 1914, Teacher, Lida.
- McFarlin, Cora, 1897 (Mrs. Leroy Weldon), Reno.
- Nelson, Mabelle Elizabeth, 1918, Mill, Wyoming.
- Nesblitt, Mattie Belle, 1909, Teacher, Blair.
- Nichol, Alma J., 1917, Virginia City.
- O'Brien, Margaret, 1900 (Mrs. F. White). No address.
- Odbert, Jimmie, 1917, Lake City, Cal.
- Ogilvie, Olive, 1907, Lee.
- O'Hara, Katherine, 1909 (Mrs. Katherine Jensen), Teacher, Lund.
- Olcovich, Annie, 1890, Teacher, Public Schools, Denver, Colo.
- O'Leary, Aloysia B., 1902, Virginia City.
- O'Neill, Clara E. (Mrs. Norris Shindler), 1916, West Fourth St., Reno.

ge, Alice M., 1918, 351 Cornwall St., San Francisco, Cal.
 mer, Grace Estelle (Mrs. G. E. Rasmussen), Burbank, Cal.
 rker, Lucy V., 1894, Teacher, Reno, 143 Vine St.
 ris, Hattie B., 1898 (Mrs. Clyde Bliss), St. Helena, Cal.
 rish, Cornelia H., 1899 (Mrs. Edgar N. Shaver), Reno.
 tterson, Elva C., 1897 (Mrs. O. W. Larson), Bishop, Cal.
 arce, Janette, 1897 (Mrs. E. A. Williams), Reno.
 arson, Mae, 1900 (Mrs. Virgil Connell), Coleville, Cal.
 ck, Bertha L., 1906 (Mrs. W. H. Toombs), Elko.
 ckham, Ethel, 1900 (Mrs. Jos. Frey), Died, 1918.
 ckham, Harriet A., 1902 (Mrs. C. Wallace Brooks), Reno.
 ndergast, Edna G., 1917, Truckee, Cal.
 ter, Theresa, 1897. Last address, 1615 Walnut St., Alameda, Cal.
 ttinger, Minnie E., 1901 (Mrs. Jas. Dougherty), Elko.
 on, Anna P., 1900, Reno.
 tt, Ada Belle, 1901 (Mrs. Frank Baker), Lovelock.
 hl, Gertrude, 1912, Teacher, Rawhide.
 hie, Marie, 1917, 141 W. Fifth St., Reno.
 lock, Sarah May, 1900, Box 32, Reno.
 orch, Maud Ellen, 1918, Eureka.
 wers, Ina H., 1916, Reno.
 ruel, Bertha, 1903. Last address, Mason, 1910.
 ruel, Eleanor, 1905. Last address, Mason, 1910.
 quadri, Ottillia Ida Irene, 1891 (Sister Bertrand), Died, November 1, 1916, Reno.
 aines, Laura Mercedes, 1918, Reno.
 aitt, Mary J., 1916, Sparks.
 amsey, Agnes, 1909, Teacher, Arthur.
 and, Elizabeth, 1907 (Mrs. Chas. Safford Walker), Palisade.
 and, Susanna, 1907 (Mrs. J. L. Leavitt), Virginia City.
 annels, Cordella, 1914 (Mrs. Irving Van Dalsem), McGill.
 annels, Katherine, 1915, Teacher, Reno.
 ead, Vyvian Alice, 1917, Box 333, Reno.
 eall, Emma C., 1904, Eureka.
 hodes, Mary Estella, 1893, Santa Cruz, Cal.
 hodes, Hattie E., 1890 (Mrs. Clarence Pierson), W. Elm St., Reno.
 Richards, Marie E., 1899 (Mrs. Wm. Trickey), Died, Bishop, Cal.
 ighini, Annie Marie, 1906, Teacher, Virginia City.

Rinckel, Louise D., 1897 (Mrs. George Blakeslee). Last address, Tonopah, 1911.
 Robb, Kate Isabel, 1895 (Mrs. George W. Greeno), Long Valley, Cal.
 Robb, Mary Anna, 1895 (Mrs. Frederick J. Cavanaugh), 619 N. Lake St., Reno.
 Robbins, Nellie, 1898 (Mrs. W. W. Williams), Fallon.
 Roberti, Zena, 1902. Last address, Tulare, Cal., 1911.
 Roberts, Minnie, 1903 (Mrs. Dudley Boyce Barnes). Last address, Wells, 1909.
 Robertson, Josephine Emma, 1894 (Mrs. W. G. Meecham). Last address, Baker, White Pine County, 1911.
 Roblson, Edna M., 1898 (Mrs. Henry Rlter), Reno.
 Ross, Lottie M., 1918, Yerington.
 Rousch, Irene, 1907, 712 S. Center St., Reno.
 Rousch, Pearl Mary, 1905, Teacher, Reno, 712 S. Center St., Reno.
 Ruddell, Alice, 1904. Last address, Lovelock, 1905.
 Rullson, Alpha, 1912, Teacher, Yerington.
 Rullson, Hazel Belle, 1896 (Mrs. Fred L. Small), 243 Elm St., Reno.
 Rulison, Winifred Claire, 1915 (Mrs. W. Bell), Austin.
 Rupp, Kathryn, 1917, Bishop, Cal.
 Ryan, Sarah M., 1898. Last address, care of San Francisco Cal., 1911.
 Ryder, Gladys, 1916, 621 S. Center St., Reno.
 *Sadler, Minnie O., 1900 (Mrs. Benjamin Plummer). Died, Carson City, September, 1903.
 Sanger, Lizzie, 1902, Teacher, Carson City.
 Savage, Elizabeth A., 1890 (Mrs. Chas. Grover). Last address, Markleeville, Cal., 1911.
 Savery, Adeline E., 1918, Virginia City.
 Saxton, Augusta M., 1896, Carson City.
 Schacht, Edna Rose, 1915, Teacher, Olinghouse.
 Schmalling, Rosa M., 1915, Teacher, Callente.
 Schoer, Christina, 1914 (Mrs. Dennis Hughes), Metropolis.
 Schulz, Theresa Frances, 1918, Carson City.
 Schweis, Laura K., 1905 (Mrs. S. B. Doten), 129 Elm St., Reno.
 Schweis, Theresa A., 1908 (Mrs. Peter McIntyre), Gold Hill.
 Scott, Mary McKee, 1902 (Mrs. Mary Rogers), Ely.
 Seely, Hazel, 1916, San Francisco, Cal.
 Shaber, Lottie, 1890 (Mrs. S. H. Rockey). Last address, Wadsworth, 1911.

- Shartel, Eleanor Hulda, 1918, with Reno Power, Light & Water Co., Reno.
- Sheehy, Gertrude, 1903 (Mrs. J. McCullough), Goldfield.
- Sheerin, Ellen L., 1915, Teacher, Elgin.
- Sherman, Matie L., 1899 (Mrs. W. L. Middour). Last address, Santa Cruz, Cal.
- Shirley, Florence Marguerite, 1918, Dayton.
- Smith, Bertha, 1903 (Mrs. J. H. Murphy), 705 Mill St., Reno.
- Smith, Edith Mae, 1918, Tuscarora.
- Smith, Emma Nevada, 1913, 311 W. Fifth St., Reno.
- Smith, Frances Petra, 1914 (Mrs. Raymond Gignoux), North Bend, Ore.
- Smith, Loria, 1903, Principal, Schools, Silver City.
- Snow, Julia Matie, 1890 (Mrs. Henry Thurtell), 1217 Delafield Place, Washington, D. C.
- Sparks, Emily M., 1897 (Mrs. John Short), Osceola.
- Spears, Sarah Margaret, 1908 (Mrs. Ernest Alderman), Washington, D. C.
- Spinner, Mabel M., 1900. Last address, W. U. Tel. Co., Los Angeles, Cal.
- Stack, Mae Ellen, 1897. Last address, San Francisco, Cal.
- Stephens, Bonnie, 1916, Sparks.
- Steiner, Georgiana, 1918, Sparks.
- Stroud, Kate, 1917, Tobar.
- Sullivan, Annie Esther, 1908, Teacher, Fairview.
- Sullivan, Grace, 1916, Virginia City.
- Sullivan, Mary, 1912, Teacher, Sparks.
- Sweeney, Louise J., 1902 (Mrs. Geo. L. Sanford), Carson City.
- Sweetman, Jean Louise, 1898. Last address, Public Schools, Los Angeles, Cal.
- Tannahill, Florence, 1898, Teacher, Wells.
- *Taylor, Clara, 1892 (Mrs. George Garman). Died, New Kensington, Pa., May, 1915.
- Taylor, Hazel Belle, 1909. Last address, Hawthorne, 1911.
- Theelan, Annie, 1898 (Mrs. E. P. McLean), Fallon.
- Thompson, Alice, 1897, Graduate, College of Physicians, San Francisco, Cal., 1914, Physician, A. E. F., France.
- Thomas, Rose, 1916, Elko.
- Thoms, Lola Nella, 1894 (Mrs. D. W. Dunkle), 238 Mill St., Reno.
- Treglone, Elizabeth M., 1902 (Mrs. Joe Eason), Austin.
- Trembath, Alice, 1897 (Mrs. Chas. Mauser), San Mateo, Cal.
- Truscott, Maud, 1891, Teacher, Bishop, Cal.
- Twombly, Bertha, 1897 (Mrs. J. H. Lamb), 200 West 10th St., Reno.
- Vallencour, Alma Berenice, 1910 (Mrs. Branton). Last address, Reno.
- Van Duzer, Arda, 1891 (Mrs. Marion S. Wilson). Last address, Denver, Colo., 1911.
- Van Duzer, Clarence D., 1889. Last address, Rock Island, Ill.
- Vann, M. Clysta, 1918, Chico, Cal.
- Virgin, Lillie M., 1897 (Mrs. L. S. Finnegan), Genoa.
- Walker, Ethel, 1918, Goldfield.
- Walker, Lillie A., 1905. Last address, Palsade, 1905.
- Wallace, Emma K., 1897 (Mrs. Ben Newlan), Bishop, Cal.
- Wallace, Mabel, 1891. Last address, Fowler, Cal., 1892.
- Wardle, Lessie Valeria, 1918, Tonopah.
- Warren, Maude, 1903 (Mrs. Maude Johnson), Yerington.
- Webster, Ethel, 1911 (Mrs. W. Schauer), Baker, Ore.
- Webster, Stella N., 1901, Teacher, Los Angeles Schools, Los Angeles, Cal.
- Weeks, Harriet, 1902 (Mrs. P. A. McCarran), Carson City.
- Welsh, Ethel, 1918, Yerington.
- Werner, Lillie May, 1889 (Mrs. James S. Audrain), Fairview, Cal.
- Wickham, Frances E., 1906 (Mrs. A. Peckham), Reno.
- Williams, Vivien Ray, 1915 (Mrs. J. C. Woodward), Mountain City.
- Williams, Ruby, 1906. Last address, Seven Troughs, 1911.
- Williams, Marye Esser, 1899 (Mrs. John Lawton Butler), Hot Creek.
- Williams, Mildred T., 1917, Fairview.
- Wilson, Beatrice, 1907. Last address, Battle Mountain, 1907.
- Wilson, Genevive, 1908 (Mrs. Clarence Chapin), Pittsburg, Cal.
- Wilson, Hicksey May, 1903 (Mrs. A. J. Robertson), Visalia, Cal.
- Wilson, Queen, 1908 (Mrs. Harry Dukes), Mason.
- Wilson, Viva J., 1907 (Mrs. Harold J. White), Quincy, Cal.
- Wiseman, Pearl Helen, 1917, Wells.
- Wittenberg, Florence R., 1900. Last address, Seattle, Wash., 1911.
- Wolf, Minnie S., 1899, Teacher, Winnemucca.
- Woods, Ruth Elizabeth, 1915, Teacher, Hornsilver.
- Wright, Elizabeth, 1902, Reno.
- Wright, Frances, 1894, Teacher, 753 N. Center St., Reno.
- Young, Juanita J., 1917, Lovelock.
- Yparraguirre, Emille Frances, 1908, Teacher, Reno, 234 W. Fourth St.
- Zecherle, Ottilla Margaret, 1894 (Mrs. H. P. Kruse), Lovelock.

ALUMNI NEWS ITEMS

The various classes were requested, through their secretaries or other representatives, to send in news items concerning the class members. Three classes responded—1906, 1916, and 1917. Their class items follow:

1906

Captain B. G. McBride, '06, 220 B Street, Southeast, Washington, D. C. Bonnie McBride received a commission as Captain in the Ordnance Department at Washington, D. C., in January, 1918. Since that time Captain McBride has had charge of the heavy carriage mounts. Before entering active service Captain McBride was Deputy State Engineer for the State of Nevada under Major J. S. Scrugham, who was at that time State Engineer of Nevada. Now, as Captain in the Ordnance Department, he is working directly under Major J. S. Scrugham.

Captain H. L. C. Jones, '06, 78th Artillery, Fort Sam Houston, Texas. Harry Jones has, since his graduation from the University of Nevada, followed the lure and romance of a military career. During his years of service he has made an enviable reputation and has won for himself a place of honor on the roster of the class of 1906. At present Captain Jones is in charge of men who are being trained at Fort Sam Houston.

"No," said his father when interviewed, "Harry is not married."

It is an interesting coincidence that Captains McBride and Jones graduated from the public schools of Elko in 1899; from the Elko County High School in 1902; entered the University in September, 1902, and were graduated from the same department in June, 1906. Both belonged to the Sigma Alpha Fraternity, and was Captain of his company during his Senior year at the University.

The 1906 class boasts a third Captain—Captain Frank Drake. After graduating from the University Frank entered West Point to complete the work of that institution. Since then Captain Drake has been in active service.

Nell Cazier-Franklin, '06, Wells, Nevada. Mrs. Franklin taught for several years in the public schools of Elko County after she was graduated from the University. In 1912 she was married to Horace Franklin of West Virginia. She is the proud mother of two fine children—Baby Belle and Master John Franklin. It is a foregone conclusion that the class of 1926, U. of N., will have enrolled the young Franklins of Wells, Nevada.

Ethel Marzen-McBride, '06, Elko, Nevada. Mrs. McBride has been engaged in doing Red Cross work and other war activities since war was declared. She completed a course in surgical dressing work, and now has charge of that work in the Elko Red Cross Chapter. Since her husband, Captain B. G. McBride, has entered active service she has been planning to offer her services to the Government for active war work.

Harry Cazier, '06, Wells, Nevada. After graduating from the University, Harry Cazier spent several years in the wilds of Central America. For some years past he has been engaged in farming, and is now numbered among the prominent ranchers and stockmen of Elko County. In 1913 he married Neva Dewar of Elko. They have three children, who are also slated to enter the University of Nevada with the class of 1926.

Stanford Weathers, '06 and Alma Goble-Weathers, '06, are at home in Deeth, Nevada. Not many years after Stanford and Alma left the University they concluded to finish life's journey as Mr. and Mrs. Weathers. Stanford, Jr., has already completed his Kindergarten work, and the fond mother predicts that he will finish with the class of '26, U. of N., capturing

greater honors than did even Stanford, Sr.

Bertha C. Knemeyer, '06, Elko, Nevada. Deputy Superintendent of Public Instruction. Still at the same old grind.

BERTHA KNEMEYER, '06.

1916

The Class of '16 already boasts one Captain in the service, Albert Jackson, who is with the Coast Artillery at Fort Hancock, New Jersey. Captain Jackson was Major of the Cadet Battalion during his Senior year at College.

Dave Abel, Fuuro Dondero, Harold McQuiston, and Leslie Hancock are all at Officers' Training Camps—Dave and Nick at Camp Lewis, and the others in California.

Frank Fake is a student in the N. A. R. C. at the Massachusetts Institute of Technology at Boston.

Lawrence White has spent the past year and a half in the Government laboratories at Papailkon, Hawaii, working on the chemical end of sugar manufacture.

Corporal Alton Glass, Ex '16, is in the 19th Field Artillery of the Regular Army at Fort Sill, Oklahoma.

Tom Hobbins was the first of the Ex '16's to go across with the American Expeditionary Forces, and has been with the Signal Corps in France for nearly a year. Oliver Layman, Lieutenant Lloyd McCubbin, and Edwin Faber are also "over there," the latter with the Canadian Exped. Forces. Just as we go to press we learn that Eddie Faber was killed in France on June 1, where he saw service in the Ambulance Corps.

Linford Riley at Yerington and William Powers at Fallon are the productive agriculturists of the Class of '16.

Mr. and Mrs. Waterfield Painter (nee Mary Leon) are at Lower Rochester, Nevada, where "Waffles" is with the Nevada Packard Mining Company.

Mr. and Mrs. Jack Pearson (nee Vivien Engle) have spent the greater part of the two years since graduation in Canada, most recently in Montreal, where Jack was employed by the Northern Electric Company. They are in Reno for the summer and will be located in San Francisco this fall.

Mr. and Mrs. Archie Trabert (nee Lysle Rushby), with their small daughter Margaret, have moved from Schenectady to New York City, where Arch will resume work with the General Electric Company.

James Constable remained with the General Electric Company in Schenectady.

Mr. and Mrs. Leslie Johnson (nee Edith Mack) are still in Scotts Bluff, Nebraska, where "Ole" is interested in the cattle business.

Mrs. Louis Herman (nee Vera Lemmon) is living in San Francisco, where Mr. Herman is a jeweler.

Of the girls of '16, six have been teaching during the past year—Ruth Murray at Dayton, Mary Raitt at Imlay, Selma Sielaff at Mina, Ethel Winger at Midas, Georgie Young at Elko, and Ina Powers at Reno—a representative half-dozen to carry the word of the University out into the State.

Chas. Reilly is at home in Tracy, California.

And since there must be some one to stay around the Campus and gather scraps of more or less up-to-date information, Ruth Miller has joined the secretarial ranks and spends her days in the Veterinary Department on the same old Hill.

RUTH MILLER, '16.

1917

Altogether now:

Oostema, Oostema!
Rippety, Rippety, Rah! Rah!
Rah! Seventeen—Rah! Seventeen
Rah! Rah!

And '17 is together in spirit still, even though thousands of

...iles are separating them. Just
...ne year ago they were graduating,
...class of thirty-eight members,
...and they prided themselves in be-
...ing the "best class ever." They
...have been traveling the steep road
...of life for one year, and they are
...keeping their record. Twelve of
...the eighteen boys are serving Uncle
...Sam, and the other six are not.
...backers. Glenn Engle and Harry
...Corey are serving the Government
...in a different capacity. The former
...is in Fallon in the Government
...reclamation office, and the latter
...is in the Government office in Okla-
...homa. Arthur Hood is climbing
...higher in his study of medicine at
...the University of California. Wil-
...fred Wylie is in San Francisco,
...with the Union Oil Company.
...Charles Masters is doing real prac-
...tical work in engineering some-
...where in Canada. Chester Bren-
...nan has become a professor in the
...Barks High School. He is still
...very loyal to the U. of N., and
...visits the Campus often. As for
...Jose Guevara we seek information.
...We know he is making good, but
...seems too busy to inform us
...about what he may be doing.

And then there are the twenty
...girls, twelve of whom are making
...very successful school teachers in
...many places throughout the State.
...The other eight chose different lines
...of work. Leah Barker is now a
...member of the Agricultural Ex-
...tension Faculty of the University.
...Her district is Douglas County.
...and to say that she has received

her reappointment certifies that
...she has been successful. Marjorie
...Cowgill has been doing M.A. work
...at the U. of N. the past year. We
...hear of her often in connection
...with the Physical Education De-
...partment. It was she who wrote
...the story for the demonstration last
...December. Margaret Kemper has
...been getting some practical experi-
...ence as a saleslady in O'Connor
...Moffatt's in San Francisco. She
...will leave the coming fall to enter
...the School for Salesmanship in Bos-
...ton. We are confident of her suc-
...cess. Ruth McKissick and Dorothy
...Mahan spent the year in Reno, both
...as business secretaries. Later
...Dorothy expects to continue her
...study in Biology in another Uni-
...versity. Marguerite McIver, very
...shortly after graduation, changed
...her name to Yandell. She is re-
...siding in Poleta, Cal., now. As
...for Ruth Anne Pyle, whom we may
...now call Mrs. Tom P. Walker, there
...is much to say. Ruth is now in
...New York City doing real war
...work under the auspices of the
...Girls' Friendly Society. She has
...been traveling through parts of
...New York and New Jersey organiz-
...ing Patriotic Leagues among fac-
...tory girls and other girls of high-
...school age. At present she is
...handling the office work in the
...main office in New York City.
...Helena Shade is the Y. W. C. A.
...Secretary at the University of
...Nevada. She will have some prac-
...tical experience in war work this
...summer at Camp Funston, Kansas.

HELENA SHADE, '17.



CARSON CITY, NEVADA

STATE PRINTING OFFICE . . . JOE FARNSWORTH, SUPERINTENDENT
1918

PATRIOTIC SONGS

Sung by

S. A. T. C.

of

University of Nevada



CARSON CITY, NEVADA

STATE PRINTING OFFICE—JOE FARNSWORTH, SUPERINTENDENT

1918

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THE STAR-SPANGLED BANNER (B flat)

Key—Arnold

Oh, say, can you see, by the dawn's early light,
What so proudly we hailed at the twilight's last gleaming?
Whose broad stripes and bright stars, through the perilous fight,
O'er the ramparts we watched were so gallantly streaming?
And the rockets' red glare, the bombs bursting in air,
Gave proof through the night that our flag was still there.

Cho. Oh, say, does that Star-Spangled Banner yet wave
O'er the land of the free and the home of the brave?

On the shore dimly seen through the mists of the deep,
Where the foe's haughty host in dread silence reposes,
What is that which the breeze, o'er the towering steep,
As it fitfully blows, half conceals, half discloses?
Now it catches the gleam of the morning's first beam,
In full glory reflected now shines on the stream.

Cho. 'Tis the Star-Spangled Banner; oh, long may it wave
O'er the land of the free and the home of the brave!

Oh, thus be it ever when free men shall stand
Between their loved homes and the war's desolation;
Blest with victory and peace, may the heav'n-rescued land
Praise the Pow'r that hath made and preserved us a nation!
Then conquer we must, when our cause it is just,
And this be our motto: "In God is our trust!"

Cho. And the Star-Spangled Banner in triumph shall wave
O'er the land of the free and the home of the brave!

JOAN OF ARC (G)

Bryan-Weston—Wells

While you are sleeping, your France is weeping,
Wake from your dreams, Maid of France.
Her heart is bleeding, are you unheeding?
Come with the flame in your glance;
Through the gates of heaven, with your sword in hand,
Come, your legions to command.

Joan of Arc, Joan of Arc, do your eyes, from the skies, see the
Don't you see the drooping fleur de lis? [foe?
Can't you hear the tears of Normandy?
Joan of Arc, Joan of Arc, let your spirit guide us through,
Come, lead your France to victory;
Joan of Arc, they are calling you.

AMERICA (F)

(My Country, 'Tis of Thee)

Smith

My country 'tis of thee,
Sweet land of Liberty,
Of thee I sing.
Land where my fathers died!
Land of the pilgrims' pride!
From every mountain side
Let freedom ring!

My native country, thee,
Land of the noble free,
Thy name I love;
I love thy rocks and rills,
Thy woods and templed hills;
My heart with rapture thrills
Like that above.

Let music swell the breeze,
And ring from all the trees
Sweet Freedom's song;
Let mortal tongues awake;
Let all that breathe partake;
Let rocks their silence break,
The sound prolong.

Our fathers' God, to Thee,
Author of liberty,
To Thee we sing;
Long may our land be bright
With Freedom's holy light;
Protect us by Thy might,
Great God, our King!

•

A MERRY LIFE (E flat)

Denza

Some think the world is made for fun and frolic,
And so do I, and so do I!
Some think it well to be all melancholic,
To pine and sigh, to pine and sigh!
But I—I love to spend my time in singing
Some joyous song, some joyous song;
To set the air with music bravely ringing
Is far from wrong, is far from wrong!

Harken! Harken! Music sounds afar!
Harken! Harken! Music sounds afar!
Tra-la-la-la, tra-la-la-la, tra-la-la-la, tra-la-la-la!
Joy is everywhere. Tra-la-la-la, tra-la-la-la!

JUANITA (E flat)

Mrs. Norton

Soft o'er the fountain,
Ling'ring falls the southern moon;
Far o'er the mountain,
Breaks the day too soon!
In thy dark eyes' splendor,
Where the warm light loves to dwell,
Weary looks, yet tender,
Speak their fond farewell.
Nita! Juanita! Ask thy soul if we should part!
Nita! Juanita! Lean thou on my heart.
When in thy dreaming,
Moons like these shall shine again,
And daylight beaming,
Prove thy dreams are vain,
Wilt thou not, relenting,
For thine absent lover sigh,
In thy heart consenting
To a prayer gone by?
Nita! Juanita! Let me linger by thy side!
Nita! Juanita! Be my own fair bride.

THERE'S A LONG, LONG TRAIL (A flat)

King—Elliott

Nights are growing very lonely,
Days are very long;
I'm a-growing weary only
List'ning for your song.
Old remembrances are thronging
Through my memory,
'Till it seems the world is full of dreams
Just to call you back to me.

Cho. There's a long, long trail a-winding
Into the land of my dreams.
Where the nightingales are singing
And a white moon beams;
There's a long, long night of waiting—
Until my dreams all come true
'Till the day when I'll be going down
That long, long trail with you.

SOMEWHERE IN FRANCE IS THE LILY (D)

Johnson—Howard

One day as morning shed its glow across the eastern sky,
A boy and a girl in accents low, in a garden said good-bye.
She said "Remember as you stray, when each must do his share,
The flowers blooming here today are emblems over there."

Cho. Somewhere in France is the lily, close to the English rose,
A thistle so keen, and a shamrock green,
And each loyal flower that grows.
Somewhere in France is a sweetheart, facing the battle's chance,
For the flow'r of our youth fights for freedom and truth
Somewhere in France.

THE U. S. A. FOREVER (C)

(Tune: Dixie)

Hibbard

Come, all who live in U. S. A.
Join in our song and sing today,
Work away, work away, for the land of the free.
United, firm, with every State,
To make a Nation good and great,
Work away, work away, for the land of the free.

Cho. The U. S. A. forever! Hurray! hurray!
The Stars and Stripes shall wave above
The U. S. A. forever.
Hurray! hurray! the U. S. A. forever!
Hurray! hurray! the Stars and Stripes forever!

The North and South, the East and West,
We love them all, for all are best,
Work away, work away, for the land of the free.
United States and hearts and hands
Will make the greatest of all lands,
Work away, work away, for the land of the free. —*Chorus.*

LA MARSEILLAISE (A)

Rouget de Lisle

Ye sons of Freedom, wake to glory!
Hark! hark! what myriads bid you rise!
Your children, wives, and grandsires hoary;
Behold their tears and hear their cries!
Behold their tears and hear their cries!
Shall hateful tyrants, mischief breeding,
With hireling hosts, a ruffian band,
Affright and desolate the land,
While peace and liberty lie bleeding!
To arms, to arms, ye braves!
The avenging sword unsheath!
March on, march on, all hearts resolved
On victory or death.

JUST A BABY'S PRAYER AT TWILIGHT (F)

Jerome

I've heard the pray'rs of mothers, some of them old and gray,
I've heard the pray'rs of others, for those who went away.
Ofttimes a pray'r will teach one, the meaning of good-bye.
I've felt the pain of each one, but this one made me cry.

Cho. Just a baby's pray'r at twilight, when lights are low.
Poor baby's eyes are filled with tears.
There's a mother there at twilight who's proud to know,
Her precious little tot is Dad's forget-me-not.
After saying "Good-night, mamma,"
She climbs up stairs quite unawares,
And says her prayers:
"Oh! kindly tell my daddy that he must take care."
That's a baby's prayer at twilight, for her daddy, "over there."

YOU MUST HONOR THE BANNER THAT'S MINE (C)

(By Robert Leslie Smaill, Carson City, Nevada.)

Uncle Sammy one day to a laddie did say
Who had come from afar o'er the sea:
From oppression you've flown, from the sorrows you've known,
To a home in the land of the free.
There's room here for you if you're loyal and true
To the flag that you see flying there;
It's the Red, White and Blue; it will take care of you
In Columbia's dominions so fair.
It was born for a cause, and I want you to pause
While I whisper these words: Have a care!

Cho. Just you bear this in mind: Leave the hyphen behind.
If you want me to carry you through,
You had better stay home to serve kings on the throne
If you've brought with you troubles to brew;
But you're welcome, my son, in this land of Freedom,
If you stick by the Red, White and Blue!

Every color and creed from their trials are freed
In the land where God only is king.
It's a haven of rest for the weak and oppressed
Where sweet Liberty's doors inward swing.
It cost bloodshed and tears; it took years and years,
With the help of the Master divine.
To force tyrants to see that mankind could live free
In the strength of Old Glory sublime.
If you care to remain in my peaceful domain
You must honor the banner that's mine!

—*Chorus.*

WE'LL KNOCK THE HELIGO INTO HELIGO OUT OF HELIGOLAND (G)

O'Brien—Morse

The bo's'n blew and a Yankee crew had stopped to hear him say,
"My lads, get under way, we're leaving port today. Hoo-ray!
We're going to meet the German fleet and blow them inside out."
Each sailor boy was filled with joy, and all began to shout:

Cho. We're on our way to Heligoland to get the Kaiser's goat,
In a good old Yankee boat, up the Kiel canal we'll float.
I'm a son-of-a-gun, if I see a Hun, I'll make him understand,
We'll knock the Hel-i-go, into Hel-i-go, out of Heli-go-land.
Yip! (and repeat).

The anchor's hauled, as the captain called; the crew are standing by,
Each man to do or die, when shells begin to fly. Good-bye!
We're going to go and let them know we hit with all our might.
I'd like to bet when we have met they'll know they had a fight.

—*Chorus.*

HAIL! HAIL! THE GANG'S ALL HERE (G)

Evrom—Morse

A gang of good fellows are we (are we),
Are we (are we), are we (are we).
With never a worry you see (you see),
You see (you see), you see (you see).
We laugh and joke, we sing and smoke,
And live life merrily—
No matter the weather, when we get together,
We have a jubilee.

Cho. Hail! Hail! the gang's all here—
Hail! Hail! We're full of cheer,
What the deuce do we care, Bill?
What the deuce do we care?
What the deuce do we care?

We love one another, we do (we do),
We do (we do), we do (we do),
With brotherly love, and 'tis true ('tis true)
'Tis true ('tis true), 'tis true ('tis true).
It's one for all, the big and small;
It's always me for you—
No matter the weather, when we get together,
We'll give a toast or two. —*Chorus.*

When out for a good time we go (we go),
We go (we go), we go (we go),
There's nothing we do that is slow (is slow),
Is slow (is slow), is slow (is slow).
Of joy we get our share, you bet;
The gang will tell you so—
No matter the weather, when we get together
We sing this song, you know. —*Chorus.*

I DON'T KNOW WHERE I'M GOING, BUT I'M ON MY WAY (G)

Fairman

Good-bye, everybody, I'm off to fight the foe—
Uncle Sammy is calling me so I must go—
Gee, I'm feeling fine; don't you wish you were me?
For I am sailing tomorrow over the deep blue sea.

Cho. And I don't know where I'm going, but I'm on my way,
For I belong to the regulars I'm proud to say—
And I'll do my du-ty-u-ty night or day—
I don't know where I'm going, but I'm on my way.

Take a look at me, I'm a Sammie through and through.
I was born on July Fourth in ninety-two;
And I'll march away with a feather in my hat,
For I'm joining the army—what do you think of that? —*Chorus.*

ONWARD, CHRISTIAN SOLDIERS (E flat)

Gould—Sullivan

Onward, Christian soldiers,
Marching as to war,
With the cross of Jesus,
Going on before.
Christ, the royal Master,
Leads against the foe;
Forward into battle,
See his banners go.

Cho. Onward, Christian soldiers,
Marching as to war,
With the cross of Jesus,
Going on before.

Like a mighty army,
Moves the Church of God;
Brothers, we are treading,
Where the saints have trod;
We are not divided,
All one body we,
One in hope and doctrine,
One in charity. —*Chorus.*

Crowns and thrones may perish,
Kingdoms rise and wane,
But the Church of Jesus,
Constant shall remain;
Gates of Hell can never
'Gainst that Church prevail;
We have Christ's own promise,
And that cannot fail. —*Chorus.*

Onward, then, ye people,
Join our happy throng;
Blend with ours your voices,
In the triumph song;
Glory, laud, and honor
Unto Christ the King;
This through countless ages.
Men and angels sing. —*Chorus.*

RED, WHITE AND BLUE (G)

Fay—Bergh

Red, White and Blue! The colors for me and you.
In France they fly, and bye and bye
They'll be in Germany too!
Red, White and Blue! There's a message in every hue;
They call us to fight for Freedom and Right
With the Red and White and Blue!

FOR YOUR COUNTRY AND MY COUNTRY (G)

Berlin

We know you love your land of liberty ;
We know you love your U. S. A.,
But if you want the world to know it,
Now's the time to show it.
Your Uncle Sammy needs you one and all ;
Answer to his call.

Cho. It's your country, its's my country,
With millions of real fighting men ;
It's your duty, and my duty
To speak with the sword, not a pen ;
If Washington were living today,
With sword in hand he'd stand up and say :
"For your country and my country,
I'll do it all over again."

America has opened up her heart
To ev'ry nationality,
And now she asks of every nation
Their appreciation.
It makes no difference now where you came,
We are all the same. —*Chorus.*

OVER THERE (B flat)

Cohan

Johnnie, get your gun, get your gun, get your gun,
Take it on the run, on the run, on the run,
Here them calling you and me—
Every son of liberty.
Hurry right away, no delay, no delay ;
Make your daddy glad, to have had such a lad,
Tell your sweetheart not to pine,
To be proud her boy's in line.

Cho. Over there, over there ; send the word, send the word over there,
That the Yanks are coming, the Yanks are coming,
The drums rum-tumming everywhere.
So prepare, say a prayer, send the word, send the word to
We'll be over, we're coming over, [beware.
And we won't come back till it's over, over there.

Johnnie, get your gun, get your gun,
Johnnie, show the Hun, you're a son-of-a-gun,
Hoist the flag and let her fly,
Like true heroes do or die.
Pack your little kit, show your grit, do your bit,
Soldiers to the ranks from the towns and the tanks,
Make your mother proud of you,
And to Liberty be true. —*Chorus.*

WHERE DO WE GO FROM HERE? (G)

Johnson—Wenrich

Paddy Mack drove a hack
Up and down Broadway.
Pat had one expression
And he used it every day.
Any time he'd grab a fare,
To take them for a ride,
Paddy jumped upon the seat,
Cracked his whip and cried:

Cho. Where do we go from here, boys?
Where do we go from here?
Anywhere from Harlem
To a Jersey City pier;
When Pat would spy a pretty girl
He'd whisper in her ear:
"Oh, joy, oh, boy, where do we go from here?"

One fine day, on Broadway,
Pat was driving fast
When the street was blown to pieces
By a subway blast.
Down the hole poor Paddy went,
A-thinkin' of his past—
Then he says, says he, "I think
These words will be my last:"

Cho. Where do we go from here, boys?
Where do we go from here?
Paddy's neck was in the wreck,
But still he had no fear.
He saw a dead man next to him,
And whispered in his ear:
"Oh, joy, oh, boy, where do we go from here?"

First of all, at the call,
When the war began,
Pat enlisted in the army
As a fighting man.
When the drills began, they'd walk
A hundred miles a day.
Though the rest got tired
Paddy always used to say:

Cho. Where do we go from here, boys?
Where do we go from here?
Slip a pill to Kaiser Bill
And make him shed a tear.
And when we see the enemy
We'll shoot them in the rear,
Oh, joy, oh, boy, where do we go from here?

K-K-K-KATY (E flat)

O'Hara

Jimmy was a soldier brave and bold,
Katy was a maid with hair of gold.
Like an act of Fate,
Kate was standing at the gate,
Watching all the boys on dress parade.
Jimmy with the girls was just a gawk,
Stuttered ev'ry time he tried to talk,
Still, that night at eight
He was there at Katy's gate
Stuttering to her this love-sick cry :

Cho. K-K-K-Katy, beautiful Katy,
You're the only g-g-g-girl that I adore.
When the m-m-m-moon shines, over the cowshed,
I'll be waiting at the k-k-k-kitchen door.

KANNING THE KAISER (G)

(Tune: Marching Through Georgia)

Bring the good old bugle, boys,
We'll sing another song,
Sing it with a spirit that
Will start the world along,
Sing it as we need to sing,
Three million strong,
While we are kanning the Kaiser.

Cho. Oh, Bill! oh, Bill! we're on the job today;
Oh, Bill! oh, Bill! we'll seal you so you'll stay.
We'll put you up in ginger in the good old-fashioned way,
While we are kanning the Kaiser.

Come, you men from Dixie land,
You lumberjacks from Maine,
Come, you Texas cowboys,
And you farmers of the plain
From Washington to Oregon
We boast of Yankee strain
While we are kanning the Kaiser. —*Chorus.*

Now we've started on the job,
We mean to put it through;
Ship the kings and kaisers all,
And make the world anew.
Clear the way for common folk,
For men like me and you,
While we are beating the Kaiser. —*Chorus*

OUR BOYS WILL SHINE TONIGHT (G)

Our boys will shine tonight, our boys will shine!
We'll shine in beauty bright all down the line;
We're all dressed up tonight—That's one good sign.
When the sun goes down and the moon comes up,
Our boys will shine.

GOOD-BYE, BROADWAY! HELLO, FRANCE! (G)

Reisner-Davis—Basketette

Good-bye, New York town; good-bye, Miss Liberty;
Your light of freedom will guide us across the sea.
Ev'ry soldier's sweetheart bidding good-bye;
Ev'ry soldier's mother drying her eye;
Cheer up, we'll soon be there,
Singing this lively air:

Cho. Good-bye, Broadway, Hello, France.
We're two million strong.
Good-bye, sweethearts, wives and mothers;
It won't take us long.
Don't you worry while we're there;
It's for you we're fighting, too.
So, good-bye, Broadway, hello, France.
We're going to square our debt to you.

Vive, Pershing, is the cry across the sea.
We're united in this fight for liberty.
France sent us a soldier, brave Lafayette
Whose deeds and fame we cannot forget.
Now that we have the chance
We'll pay our debt to France. —*Chorus.*

KEEP YOUR HEAD DOWN, FRITZIE BOY (B flat)

Lieut. Gitz Rice, Battle of Ypres, 1915

In the Yankee trenches, up to their eyes in clay.
Billy and Jack and Jimmy and Joe are singing all day.
When they see a German, sticking up his snout,
They give him a chance, to get out of France
When they all shout—

Cho. Keep your head down, Fritzie Boy;
Keep your head down, Fritzie Boy;
Last night, in the pale moonlight, I saw you, I saw you.
You were fixing your barb-wire, when we opened rapid fire.
If you want to see your vater und der vaterland
Keep your head down, Fritzie Boy.

Sam, the Boche got wise, hearing this every night;
He sent a bunch of rifle grenades, to give us all a fright.
But he couldn't stop us; we let out a roar—
We'll give you your fill of old Kaiser Bill
And this darned war. —*Chorus.*

GOOD-NIGHT LADIES (B flat)

Good-night, ladies; Good-night, ladies; Good-night, ladies.
We're going to leave you now.

Merrily we roll along, roll along, roll along;
Merrily we roll along, o'er the deep blue sea.

**PACK UP YOUR TROUBLES IN YOUR OLD KIT-BAG, AND
SMILE, SMILE, SMILE (G)**

Asaf—Powell

Private Perks is a funny little codger,
With a smile—a funny smile.
Five feet none, he's an artful little dodger
With a smile—a funny smile.
Flush or broke, he'll have his little joke,
He can't be suppressed,
All the other fellows have to grin,
When he gets this off his chest: Hi—

Cho. Pack up your troubles in your old kit-bag,
And smile, smile, smile.
Remember you are following your own old flag;
Smile, boys, that's the style.
What's the use of worrying?
It never was worth while. So—
Pack up your troubles in your old kit-bag,
And smile, smile, smile.

Private Perks went a-marching into Flanders,
With his smile, his funny smile,
He was loved by all the privates and commanders,
For his smile, his funny smile.
When a throng of Boches came along
With a mighty swing—
Perks yelled out, "This little bunch is mine,
Keep your heads down, boys, and sing:" Hi— —*Chorus.*

Private Perks came back from Boche-shooting,
With his smile, his funny smile,
Around his home he then set about recruiting,
With his smile, his funny smile.
He told all his pals, the short and tall,
What a time he had,
And as each enlisted like a man,
Private Perks said, "Now, my lad," Hi— —*Chorus.*



STATE OF NEVADA

SUPPLEMENTAL ABSTRACT OF ADDITIONAL AND AMENDED CLAIMS

TO THE

Waters of the Humboldt River and Its Tributaries

Compiled in the Office of State Engineer, Under Authority of Chap.
140, Statutes of 1913, as amended by Chap. 253, Statutes of 1915

SEYMOUR CASE, State Engineer



CARSON CITY, NEVADA

STATE PRINTING OFFICE—JOE FARNSWORTH, SUPERINTENDENT

1918



EXPLANATORY

Subsequent to the preparation and service of the abstract of claims to the waters of the Humboldt River and its Tributaries, dated March 1, 1916, additional and amended claims in and to the waters of the Humboldt River and its Tributaries were filed under authority of the order of the Federal Court requiring the State Engineer's office to receive claims when tendered for filing, and by order of the State Engineer duly allowing the same to be filed and entered. The following abstract represents the additional and amended claims so filed. This supplemental abstract is made a part of the original abstract above referred to as filed in the office of the State Engineer on March 1, 1916, and a copy of such original abstract is mailed herewith. The supplemental abstract should be carefully examined in connection with the original compilation before contests are entered against any claim as the same appears in the said original abstract.

SEYMOUR CASE,
State Engineer.

STATE OF NEVADA STATE ENGINEER'S OFFICE

I, Seymour Case, State Engineer of the State of Nevada, duly appointed and qualified, having charge of the records and files of the office of the State Engineer, do hereby certify that the following is a full, complete and true copy of an abstract of additional and amended claims in and to the waters of the Humboldt River and its Tributaries prepared and filed at said office on the 1st day of November, 1918, as appears by the records and files of the office of the State Engineer of Nevada, and nothing more or less.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office at the City of Carson, State of Nevada, this 1st day of December, 1918.

[SEAL]

SEYMOUR CASE,
State Engineer.

**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 1**

**HUMBOLDT SINK TO OREANA,
In Humboldt County, Nevada**

Claimant—Bergman & Alfree, by Joseph Hill, Lovelock, Nevada.
Source—Humboldt River.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Southwest and Marzen Ditches and Lovelock Slough.	1874	1874	100.00	34			27	31	
		1876	(*)	32			27	31	
		1877	160.00	4	E½SW¼		26	31	
		1880	440.00	4			26	31	
		1880	200.00	34			27	31	
		1880	60.00	32			27	31	
		1883	160.00	5	E½		26	31	
		1883	340.00†	34			27	31	
		1883	20.00†	32			27	31	
		1883	20.00†	33			27	31	
		1883	600.00†	3			26	31	
		1885	280.00	33			27	31	
		1885	100.00	32			27	31	
Total.....							2,480.00		

*Irrigation begun. †Pasture.

REMARKS: This supplementary proof is made to correct error in former proof as to date of appropriation and beneficial use and irrigation of 100 acres in Sec. 34, Tp. 27 N, R. 31 E, given in former proof as 1876, while the correct date should be 1874, through the Ryan and Hazelton, Craig and Winslow, St. Clair and Tully ditches, afterwards consolidated into the R. R. Ditch. Ryan and Hazelton, Craig and Winslow ditches were constructed and water used through the same for the irrigation of Sec. 34 in 1874.

The water rights and lands herein described were formerly the Estate of Joseph Marzen. The Railroad Ditch was built in November, 1874, and has been used ever since in connection with Southwest and Lovelock Slough for the irrigation of lands described above.

Claimant—William M. Biggs, by C. V. Biggs, Lovelock, Nevada.
Source—Humboldt River.

The Steve Young Ditch.....	Completed over 15 years ago.	1914	70.00	7	W½SE¼		27	32	
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REMARKS: Claimant buys water from the Young Ditch Company at an annual fixed rate.

Claimant—Mrs. E. A. Borland, Lovelock, Nevada.
Source—Humboldt River.

Borland Slough.....	1895	1895	225.00	27	N½		27	31	
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FROM PROOF: Water from said Borland Slough is waste and drainage water from the irrigation of the lands lying under and draining into said slough together with the water from the Old Channel and Last Chance ditches, direct flow from river which are turned into said slough and afterward reclaimed and diverted by claimant and used in conjunction with direct flow from river through claimant's ditches already referred to for the irrigation of said 225 acres. Claimant has installed electric power and pumping plant which he intends to use in connection with dams and ditches in and from said slough. (For additional claim, see page 8 of original compilation.)

Claimant—John Christensen, by Chris Hanson, Lovelock, Nevada.
Source—Humboldt River.

Harrison and Mayes, Southwest and 1877* Last Chance or Irish-American Ditch.	1880	80.00	28	E½NW¼		27	31		
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REMARKS: The NW¼, Sec. 28, Tp. 27 N, R. 31, was first irrigated by water through the Mayes and Harrison Ditch in 1880, said ditch being constructed in 1877. In 1883 the Southwest Ditch was constructed, John Harrison the owner of said NW¼, Sec. 28, and past owner in the Mayes and Harrison Ditch, being one of the original appropriators of the Southwest Ditch, and said Southwest Ditch succeeding to all the rights of the Mayes and Harrison Ditch. From 1883 to October 7, 1910, said E½ of NW¼, Sec. 28, was irrigated through the said Southwest Ditch. In October, 1910, Julius Christensen, the assignee for John Harrison for said E½ of NW¼, Sec. 28, sold and disposed of his 1/16 interest in the Southwest Ditch, to John G. Taylor, the consideration being 25/12/84 interest in the Last Chance or Irish-American Ditch, and from said date, October 7, 1910, to the present time said E½ of NW¼, Sec. 28, has been irrigated through Last Chance or Irish-American Ditch. Neither the Southwest and Last Chance ditches are incorporated, the interests in same being tenants in common.

*Harrison and Mayes Ditch.

Claimant—Julius Christensen, by John G. Taylor, Lovelock, Nevada.
Source—Humboldt River.

Southwest Ditch.....	1883	1890	80.00	28	E½NE¼		27	31	
		1890	80.00	28	W½NW¼		27	31	

Claimant—Thos. P. Ebert, Lovelock, Nevada.

Source—Humboldt River.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Young Ditch Co. (a corporation).....	1888	1915	17.00	7	SE $\frac{1}{4}$ SW $\frac{1}{4}$	27		32	
			20.00	7	SE $\frac{1}{4}$ SW $\frac{1}{4}$	27		32	
			85.43	7	NE $\frac{1}{4}$ SW $\frac{1}{4}$	27		32	
Total			72.43						

NOTE: This claim to water is by purchase from the S. R. Young Irrigation and Water Power Co's. Tunnel Ditch.

Claimant—Millie E. Evans, San Francisco, Cal.

(Formerly Rogers Estate).

Source—Humboldt River.

Rodgers Ditch (formerly Blake), See below	1862	140.00	26			26	31
Winslow, Slavin, Weykel, Sachsenheimer, Kewley, McCallum & Andrieux, McCallum, Brown, Fuss, Marker, Farmer, Union Canal and overflow.	1862	80.00	10		S $\frac{1}{4}$	26	31
	1864	40.00	11		SW $\frac{1}{4}$	26	31
	1867	160.00	23		NW $\frac{1}{4}$	26	31
	1878	257.80	14			26	31
	1876	510.00	13			26	31
	1876	132.00	35		N $\frac{1}{4}$	26	31
	1877	217.00	23		E $\frac{1}{4}$	26	31
	1877	87.70	26			26	31
	1878	256.25	24			26	31
	1880	562.50	15			26	31
	1883	116.50	10			26	31
	1884	420.00	7			26	32
	1890	320.00	24		E $\frac{1}{4}$	26	31
	1890	467.70	25			26	31
	1890	200.00	16			26	31
	1891	495.00	18			26	32
	1891	240.50	19			26	32
	1909	60.00	25			27	31
Total			4,772.95				

FROM PROOF: The present irrigation system, known as the Rodgers Canal system, used for supplying water to the lands hereinbelow and by reference described, consists of the consolidation of a number of independent canals and ditches, the survey and construction of which were initiated in 1862 and the succeeding years. The lands watered and intended to be watered through said canals and ditches and the water rights appurtenant thereto were gradually brought into a single ownership by P. N. Marker, predecessor of claimant, during the period from 1875 to 1888, when a total area of approximately 10,480 acres was reached, which constitutes what is now known as the Rodgers Ranch, outlined in yellow on the map embodied herein and marked "A," and for which water rights are now claimed. As the lands formerly irrigated separately, and their appurtenant water rights were acquired and consolidated by Marker, the canals and ditches used in connection therewith were likewise merged into a single system for the double purpose of reducing operation costs and gaining a more economical use of water.

Of the more important ditches so merged in the Rodgers Canal System, as shown by proof of water rights filed by P. N. Marker and H. C. Marker in the public records of Humboldt County in 1889, the following may be named with a brief statement of the essential related facts:

- (a) Blake Ditch—
Commenced in 1862.
Completed and water turned in, 1863;
2,200 acres proposed to be irrigated;
Capacity 44.32 cubic feet per second.
- (b) Winslow Ditch—
Constructed and completed in 1863,
2,000 acres proposed to be irrigated;
Capacity 44.99 cubic feet per second.
- (c) Weykel Ditch—
Constructed and completed in 1863,
2,560 acres proposed to be irrigated;
Capacity 27.93 cubic feet per second.
- (d) Kewley Ditch—
Constructed and completed in 1864, extended in 1869,
1,180 acres proposed to be irrigated;
Capacity 45 cubic feet per second.
- (e) McCallum & Andrieux Company Ditch—
Constructed and completed in 1864,
11,120 acres proposed to be irrigated;
Capacity 47.65 cubic feet per second.
- (f) McCallum Ditch—
Constructed and completed in 1864,
9,200 acres proposed to be irrigated.
Capacity 25 cubic feet per second.
- (g) Slavin Ditch—
Constructed and completed in 1864,
1,440 acres proposed to be irrigated;
Capacity 44 cubic feet per second.

MILLIE R. EVANS—Continued.

- (h) **J. B. Brown Ditch—**
Constructed and completed in 1868,
13,320 acres proposed to be irrigated;
Capacity 371.47 cubic feet per second.
- (i) **Sachsenheimer Ditch—**
Constructed and completed in 1869,
5,000 acres proposed to be irrigated;
Capacity 59.57 cubic feet per second.
- (j) **Farmers Ditch—**
Constructed and completed in 1875-76,
5,000 acres proposed to be irrigated;
Capacity 234.38 cubic feet per second.
- (k) **Marker Ditch—**
Constructed and completed in 1875-76,
7,240 acres proposed to be irrigated;
Capacity 38.23 cubic feet per second.
- (l) **Fuss Ditch—**
Constructed and completed in 1878,
5,000 acres proposed to be irrigated;
Capacity 48.32 cubic feet per second.
- (m) **J. B. Brown Extension Ditch—**
Constructed and completed in 1882-83,
14,200 acres proposed to be irrigated;
Capacity 404.08 cubic feet per second.

Prior to 1880 about 2,500 acres had been irrigated and cultivated in Sections 10, 11, 13, 14, 15, 23, 24, 26 and 35 of the area now constituting the Rodgers Ranch. By 1890 the irrigated area had increased to about 4,000 acres, of which approximately 2,760 acres were cultivated. In 1898 a survey showed the area in cultivation and producing crops to be about 2,656 acres, with an additional area of about 1,000 acres irrigated pasture. Again in 1901-1902 a detailed survey showed the area plowed or bearing crops to be 4,370 acres, with an additional area of about 700 acres of irrigated pasture. The State Engineer's survey of 1912 showed (abstract of claims 1916, page 20) 4,294 acres cultivated, 662 acres of irrigated pasture, and 563 acres formerly irrigated but designated as "long idle," or a total of 5,509 acres which had been irrigated prior to the date of said survey.

The foregoing totals showing the areas irrigated at different periods are not intended of course as in any way limiting the water rights of claimant to such areas, but are presented as indicating progress in putting to beneficial use the rights to the use of water initiated by claimant's predecessors in interest for the entire irrigable area of the Rodgers Ranch. As more fully appears elsewhere herein, the water rights acquired and initiated by P. N. Marker, and now owned by claimant, were acquired and initiated with the intention, then clearly manifested, of irrigating all of the lands within the present Rodgers Ranch, and the development of said lands by the application of water thereto has been uniformly carried forward in accordance with such original intention, except when interrupted by shortage of water due to low-stream flow or wrongful diversion by upper appropriators.

Claimant—Kate I. Nixon, John Fant and Nixon Estate Co.

Riverside Ranch, Lovelock Nevada.

Source—Humboldt River.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.E.</i>
Rodgers Ditch, sometimes called Poker Brown or Marker Ditch.	1873	Between 1868 & 1871*	10.00 or more	36	NE½	27	31	
		1873	80.00	36	NW¼	27	31	
		1873	60.00	36	SW¼	27	31	
		1880	52.28	36	NW¼	27	31	
		1880	29.26	36	SE¼	27	31	
		1880	29.00	36	NE¼	27	31	
		1880	20.00	36	SW¼	27	31	
		1882	47.29	36	SW¼	27	31	
		1882	16.22	36	NE¼	27	31	
		1882	25.55	36	SE¼	27	31	
		1882	30.00†	36	N¼	27	31	
		1883	28.00	35	SE¼	27	31	
		1883	52.00	35	SW¼	27	31	
		1885	153.85	35	NE¼	27	31	
		1885	75.00	35	SE¼	27	31	
		1898	25.72	35	SW¼	27	31	
		1901	29.77	35	SE¼	27	31	
Total.....			763.94					

*By William Silverwood. †Washed out by flood of 1910.

FROM PROOF: "The ditches used in the irrigation of the above-mentioned lands commonly known as the 'Riverside Ranch' derive their supply of water from the Marker or Rodgers Ditch System. * * * In the Marker or Rodgers Ditch System is the Poker Brown Ditch or J. B. Brown Water Ditch, located November 12, 1873, recorded page 147, Book "C" of Notices, in each of which the claimants own an undivided one-eighth interest. * * * These ditch rights, together with several locations and rights make up the water rights of the lands above mentioned as owned by the claimants, as follows:"

Here follows a reference to the following ditches, with book and page of record, as com-

KATE I. NIXON—Continued.

prising the above-named system: Silverwood, Muttiebury, Slough, Hazelton-Thies, J. H. Thies, and the Thies Reservoir.

"The claimants herein, their grantors and predecessors in interest, have, for more than thirty years last past, continuously appropriated and beneficially used an undivided 3/24ths of the waters which have flowed in the Rodgers or Marker Ditch, as will clearly appear from the records and testimony on file in the office of the State Engineer at Carson City, Nevada."

" * * * Here follows reference to testimony which indicates that water flowing in the Rodgers or Marker Ditch is claimed, and by agreement has been used, in the following proportions: 3/24ths by the claimants herein, 7/24ths by L. N. Carpenter, and 14/24ths by the Arthur Rodgers Estate, now Millie R. Evans, Claimant.

Claimant—George W. Ostrander, Lovelock, Nevada.

Source—Humboldt River.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Young Ditch Co., a corporation.....	1888*	1914	54.63	7	Lots 3 & 4 of SW1	27	32		

REMARKS: *Young Ditch Co., a corporation, is the successor in interest to all the water, water rights, dams, canals, and easements of the original appropriation and construction of the Irrigation and Water Power Company's tunnel and ditch, sometimes called Humboldt Irrigation and Power Company's Canal.

Claimant—Vik Sebbas, Lovelock, Nevada.

Source—Humboldt River.

Humboldt Irrigation and Power Co.'s Canal, or Young Ditch.	1888	1901	100.00	2	S1	27	31
		1914	10.00	2	S1	27	31
Total.....			110.00				

Claimant—Emil W. Sommers and Catherine E. Sommers (formerly E. W. Sommers), Lovelock, Nevada.

Source—Humboldt River.

Highflier, formerly called Arthur Kewley Ditch.....	1888	1888	160.00	2	NW1	25	31
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REMARKS: On March 1, 1902, claimant deeded his water right to Lovelock Land and Development Company, and said company deeded back to claimants sufficient water to irrigate his said 160 acres of land.

Claimant—I. M. Springer, Sr., and Mrs. Ada E. Springer, Lovelock, Nevada.

Source—Humboldt River.

Irish-American or Last Chance Ditch and Dam.	1887	1878	10.00	23	W1NE1&NW1SE1	27	31
		1888	20.00	23	W1&NE1&NW1SE1	27	31
		1890	20.00	23	W1&NE1&NW1SE1	27	31
		1906	10.00	23	W1NE1&NW1SE1	27	31
		1909	15.00	23	W1NE1&NW1SE1	27	31
		1905-1906	40.00	23	E1NE1	27	31
		1914	3.00	23	W1SE1	27	31
		1915	3.00	23	NW1SE1	27	31
Total.....			121.00				

Claimant—William C. Thorne and Ida M. Thorne (formerly S. Billups), Lovelock, Nevada.

Source—Humboldt River.

Irish-American Ditch or Last Chance Ditch and Dam.	1887	1886	4.00	23	SW1SE1	27	31
		1888	15.00	23	SW1SE1	27	31
		1890	3.00	23	SW1SE1	27	31
		1893	11.00	23	SW1SE1	27	31
Total.....			33.00				

FROM PROOF: Mr. S. Billups was one of the first two that used water from the Irish-American Ditch. He used water in 1886 and 1887 from the Southwest Ditch and Dam for the same ground.

Claimant—John G. Taylor, Lovelock, Nevada.

Source—Humboldt River.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Last Chance or Irish-American Ditch.*	1887	1888	200.00	22	SW $\frac{1}{4}$				
				21	SE $\frac{1}{4}$				
		1889	50.00	22	E $\frac{1}{2}$ NE $\frac{1}{4}$	27	31		
				21	SW $\frac{1}{4}$				
		1890	50.00	22	E $\frac{1}{2}$ NE $\frac{1}{4}$	27	31		
				21	SW $\frac{1}{4}$				
		1898	150.00	29	SE $\frac{1}{4}$	27	31		
					NE $\frac{1}{4}$				
		1898	160.00	29	SE $\frac{1}{4}$ NW $\frac{1}{4}$	27	31		
		1898	40.00	30	SE $\frac{1}{4}$ SE $\frac{1}{4}$	27	31		
		1898	15.00	31	NE $\frac{1}{4}$ NE $\frac{1}{4}$	27	31		
		1897	20.00	27	E $\frac{1}{2}$ SE $\frac{1}{4}$				
					NE $\frac{1}{4}$	27	31		
		1898	75.00	31	E $\frac{1}{2}$ SE $\frac{1}{4}$	27	31		
		1898	75.00	6	N $\frac{1}{2}$ NE $\frac{1}{4}$	26	31		
Total.....			835.00						
Old Channel Ditch Company (a corporation).†	1888	1888	20.00	3	N $\frac{1}{2}$	27	31		
		1893	60.00	3	N $\frac{1}{2}$	27	31		
		1894	320.00	10	N $\frac{1}{2}$	27	31		
		1895	85.00	10	S $\frac{1}{2}$	27	31		
		1895	90.00	21	W $\frac{1}{2}$ NE $\frac{1}{4}$				
					E $\frac{1}{2}$ NW $\frac{1}{4}$ &NE $\frac{1}{4}$				
					SW $\frac{1}{4}$	27	31		
		1918	180.00	32	W $\frac{1}{2}$	27	31		
Total.....			755.00						
Young Ditch Company (a corporation).‡	1888	1890	18.00	28		28	32		
		1895	198.00	3	S $\frac{1}{2}$	27	31		
		1896	155.00	6	W $\frac{1}{2}$	27	32		
			117.00	30	W $\frac{1}{2}$ NW $\frac{1}{4}$				
					NW $\frac{1}{4}$ SW $\frac{1}{4}$	28	32		
		1898	70.00	3	N $\frac{1}{2}$	27	31		
		1900	320.00	4	E $\frac{1}{2}$	27	31		
		1900	320.00	34	S $\frac{1}{2}$	28	31		
		1917	320.00	34	N $\frac{1}{2}$	28	31		
			40.00	33	SE $\frac{1}{4}$	28	31		
Total.....			1,540.00						
Tycksen or Marszen Slough waste and drainage water.§	1890	1890	30.00	28	W $\frac{1}{2}$ NW $\frac{1}{4}$	27	31		
		1893	150.00	29	NE $\frac{1}{4}$				
					SE $\frac{1}{4}$ NW $\frac{1}{4}$	27	31		
		1893	160.00	29	SW $\frac{1}{4}$	27	31		
			40.00	30	SE $\frac{1}{4}$ SE $\frac{1}{4}$	27	31		
			15.00	31	NE $\frac{1}{4}$ NE $\frac{1}{4}$	27	31		
		1898	75.00	31	E $\frac{1}{2}$ SE $\frac{1}{4}$	27	31		
			75.00	6	N $\frac{1}{2}$ NE $\frac{1}{4}$	26	31		
		1918	180.00	32	W $\frac{1}{2}$	27	31		

FROM PROOF: *Water right for 835 acres above described was originally through Last Chance or Irish-American Ditch in conjunction with Tycksen or Marszen Slough, and are now irrigated from the above, together with Old Channel, Young, and Southwest Ditches.

†Water right for the 755 acres above described was originally through the Old Channel Ditch, but are now irrigated jointly from the Old Channel and Young Ditches. 180 acres in Sec. 32, Tp. 27, R. 31, are irrigated through Old Channel, Young, and Tycksen or Marszen Slough; 90 acres in Sec. 21 irrigated through Last Chance or Irish-American Ditch.

‡Water right for the 1,540 acres above described was originally through the Young Ditch. Land in Secs. 3 and 4, Tp. 27, R. 31 E, now irrigated in conjunction with Old Channel Ditch.

§The water from Tycksen or Marszen Slough being waste or drainage water from the irrigation of the land draining into said slough, together with water direct from river through Old Channel or Irish-American Ditches, empties into said slough and by claimant is reclaimed by reason of dams built in said slough and directed and used by claimant for the irrigation of the lands above described, together with direct flow from the river through claimant's ditches already referred to. Claimant has installed electric power and pumping plant which he intends to use in connection with dam and gravity flow above mentioned.

REMARKS: The 18 acres mentioned in Sec. 28, Tp. 28 N, R. 32 E (under Young Ditch): Title to the above is in S. R. Young, and reference to the same is made herein for the purpose of showing the beneficial use and irrigation of said 18 acres under the Young Ditch in the year 1890. Claimant has no title to or interest in said 18 acres.

NOTE: Several of the above-described tracts are irrigated through two or more ditches.

Claimant—Union Land and Cattle Co., Reno, Nevada, formerly
Nevada Land and Live Stock Company.

Source—Humboldt River.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Southwest Ditch, formerly Mayes & Harrison Ditch.	1880*	1877	10.00	28	S½	27	31		
		1878	80.00	28	S½	27	31		
		1880	70.00	28	S½	27	31		
		1883	51.00	32	N½NE½	27	31		
		1884	57.50	28	S½	27	31		
		1885	80.00	33	N½	27	31		
		1887	135.50	27	SW¼	27	31		
		1891	184.00	29	SE¼	27	31		
		1895	48.00	33	N½	27	31		
		1877	450.00	28	S½	27	31		
Through a ditch* constructed in 1877 from a branch of the Graveyard Slough.				33	N½	27	31		
				32	NE½	27	31		
				29	E½	27	31		

*Mayes and Harrison Ditch constructed 1877.

†From Proof—Claim is made for the right to irrigate through a ditch constructed in the year 1877, diverting from a branch of the Graveyard Slough in the SW¼ Sec. 28, T. 27 N. R. 32, E. M. D. B. & M. for the irrigation of 450 acres lying in S½ Sec. 28, N½ Sec. 33, NE½ Sec. 32, and E½ Sec. 29, T. 27 N. R. 31 E. M. D. B. & M. The use of water through said ditch diverted from said Natural Slough has been maintained from year to year and the claim is made so as to perfect and continue such right in force. This right is used only as an adjunct to the main river right. The full river right heretofore claimed in proofs on file is not to be lessened in any manner.

Office Note: For claim from Irish-American Ditch, see original compilation of March, 1916, page 17.

Claimant—U. S. Government, Department of Interior, by
J. A. Phifer, Lovelock, Nevada.

Source—Humboldt River.

Southwest Ditch* Note: *Date taken from proof No. 0525 by W. C. Pitt, area taken from survey by State Engineer.	1890	1899	20.00	27	S½SW½SE½	27	31
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**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 2**

**Comprising the Humboldt River from Oreana to Pinson Bridge,
Near Golconda, Including the Following Tributaries:**

LITTLE ROCK CREEK

POLE CREEK

In Humboldt County, Nevada

Claimant—J. A. Callahan (formerly Eric Johnson),
Winnemucca, Nevada.

Source—Humboldt River.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
St. Mary's Ditch and by dam	1866	1866	891.12	25	SW $\frac{1}{4}$	38	33		
raising and spreading water onto flats.				26	S $\frac{1}{4}$ SE $\frac{1}{4}$	38	33		
					NE $\frac{1}{4}$ SE $\frac{1}{4}$	38	33		
				34	S $\frac{1}{4}$	38	33		
				34	S $\frac{1}{4}$ N $\frac{1}{4}$ *	38	33		
				34	NE $\frac{1}{4}$ NW $\frac{1}{4}$	38	33		
					NE $\frac{1}{4}$ NE $\frac{1}{4}$	38	33		
				35		38	33		
				36	N $\frac{1}{4}$ NW $\frac{1}{4}$	38	33		

*Should be S $\frac{1}{4}$ N $\frac{1}{4}$.

REMARKS: The waters of said river have been used, appropriated, and utilized to drive machinery for a quarts mill, and pump water for irrigation since June 5, 1876, and that date is hereby fixed as the date of the appropriation of two hundred cubic feet of water per second for said purpose of water power, and the same is claimed by this affiant for that purpose, to-wit: furnishing power. The waters so used are stored and reservoid by the said dam on the SW $\frac{1}{4}$ of Sec. 25, T. 33, R. 33 aforesaid.

Claimant—Golconda Cattle Co., Golconda, Nevada.

Source—Little Rock Creek.

Numerous unnamed ditches, as shown on map, sometimes called "Bains" Ditch.	1866	1866-1872	18.77	6	NW $\frac{1}{4}$ NW $\frac{1}{4}$	34	40		
			.87	6	SW $\frac{1}{4}$ NW $\frac{1}{4}$	34	40		
			29.47	6	NE $\frac{1}{4}$ NW $\frac{1}{4}$	34	40		
			1.45	6	NW $\frac{1}{4}$ SW $\frac{1}{4}$	34	40		
			14.60	6	NW $\frac{1}{4}$ NE $\frac{1}{4}$	34	40		
			24.17	6	NW $\frac{1}{4}$ NE $\frac{1}{4}$	34	40		
			4.37	6	SE $\frac{1}{4}$ NE $\frac{1}{4}$	34	40		
			16.40	6	NE $\frac{1}{4}$ NE $\frac{1}{4}$	34	40		
			19.78	5	NW $\frac{1}{4}$ NW $\frac{1}{4}$	34	40		
			7.55	5	SW $\frac{1}{4}$ NW $\frac{1}{4}$	34	40		
			9.20	5	SE $\frac{1}{4}$ NW $\frac{1}{4}$	34	40		
			35.75	5	NE $\frac{1}{4}$ NW $\frac{1}{4}$	34	40		
			20.62	5	NW $\frac{1}{4}$ NE $\frac{1}{4}$	34	40		
			8.55	5	NE $\frac{1}{4}$ NE $\frac{1}{4}$	34	40		
			10.82	31	SE $\frac{1}{4}$ SW $\frac{1}{4}$	35	40		
			31.80	31	SW $\frac{1}{4}$ SE $\frac{1}{4}$	35	40		
			15.55	31	NE $\frac{1}{4}$ SE $\frac{1}{4}$	35	40		
			40.00	31	SE $\frac{1}{4}$ SE $\frac{1}{4}$	35	40		
			40.00	32	SW $\frac{1}{4}$ SW $\frac{1}{4}$	35	40		
			40.00	32	SE $\frac{1}{4}$ SW $\frac{1}{4}$	35	40		
			.55	32	NW $\frac{1}{4}$ SW $\frac{1}{4}$	35	40		
			4.57	32	SW $\frac{1}{4}$ SE $\frac{1}{4}$	35	40		
			27.80	32	SW $\frac{1}{4}$ SE $\frac{1}{4}$	35	40		
			27.27	32	SE $\frac{1}{4}$ SE $\frac{1}{4}$	35	40		
			5.30	32	SE $\frac{1}{4}$ SE $\frac{1}{4}$	35	40		
			20.60	33	SW $\frac{1}{4}$ SW $\frac{1}{4}$	35	40		
			18.35	33	SW $\frac{1}{4}$ SW $\frac{1}{4}$	35	40		
			16.22	6	SE $\frac{1}{4}$ NW $\frac{1}{4}$	35	40		
			25.85	6	SW $\frac{1}{4}$ NE $\frac{1}{4}$	35	40		
			9.65	1	NW $\frac{1}{4}$ NE $\frac{1}{4}$	35	40		
			1.00	1	SW $\frac{1}{4}$ NE $\frac{1}{4}$	35	40		
			12.22	1	NE $\frac{1}{4}$ NE $\frac{1}{4}$	35	40		
			2.95	1	SE $\frac{1}{4}$ NE $\frac{1}{4}$	35	40		
Total.....			561.55						

Claimant—C. L. Tobin, formerly Tobin & Pierce,
Winnemucca, Nevada.

Source—Humboldt River.

Sloan Ditches Nos. 1 and 2.....	1871	1871*	3,000.00†	3	N $\frac{1}{4}$	36	38		
				34	E $\frac{1}{4}$ NW $\frac{1}{4}$	37	38		
				34	E $\frac{1}{4}$	37	38		
				35	All	37	38		
				2	NE $\frac{1}{4}$	36	38		
				2	N $\frac{1}{4}$ NW $\frac{1}{4}$	36	38		
				1	N $\frac{1}{4}$	36	38		
				36	S $\frac{1}{4}$	37	38		
				36	NE $\frac{1}{4}$ SE $\frac{1}{4}$				
					NW $\frac{1}{4}$	37	38		
				6	N $\frac{1}{4}$ NW $\frac{1}{4}$	36	39		
				31	All	37	39		

*By Elizabeth Sloan. †More or less.

REMARKS: The original appropriation of water in 1871, involved the damming up of two sloughs in Sections 34 and 35, T. 37 N, R. 38 E, which backed the water up and irrigated the major part of the above-described lands by overflow. Subsequently in 1875 the claimant and his grantors constructed a dam across the Humboldt River in SE $\frac{1}{4}$ of Sec. 31, T. 37 N, R. 37 E, and made two ditches, Nos. 1 and 2, conveying the water of the river through said artificial ditches to said sloughs.

Claimant—Taylor & Sheehan, Winnemucca, Nevada.

Source—Humboldt River.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
The Humboldt Canal.....	1864	1865	6.50	20	SW1NE1	36	40		
			25.30	20	NE1SE1	36	40		
			37.65	20	NW1SE1	36	40		
			34.20	20	NE1SW1	36	40		
			35.65	20	NW1SW1	36	40		
			25.80	20	SW1NW1	36	40		
			37.30	20	SE1SE1	36	40		
			32.90	20	SW1SE1	36	40		
			34.75	20	SE1SW1	36	40		
			40.40	20	SW1SW1	36	40		
			.70	21	NW1SW1	36	40		
			2.40	21	SW1SW1	36	40		
			14.90	29	NE1NE1	36	40		
			34.80	29	NW1NE1	36	40		
			37.85	29	NE1NW1	36	40		
			39.80	29	NW1NW1	36	40		
			1.00	29	SE1NE1	36	40		
			24.10	29	SW1NE1	36	40		
			20.50	29	SE1NW1	36	40		
			10.80	29	SW1NW1	36	40		
	1864	1912	13.90	12	SE1SW1	36	39		
			5.10	12	SW1SW1	36	39		
			18.35	13	NW1NE1	36	39		
			33.65	13	NE1NW1	36	39		
			30.00	13	NW1NW1	36	39		
			38.25	13	SW1NE1	36	39		
			21.85	13	SE1NE1	36	39		
			38.25	13	SW1NE1	36	39		
			28.65	13	SE1NW1	36	39		
			38.80	13	SW1NW1	36	39		
			39.30	13	NE1SE1	36	39		
			25.60	13	NW1SE1	36	39		
			40.20	13	NE1SW1	36	39		
			38.95	13	NW1SW1	36	39		
			28.65	13	SE1SE1	36	39		
			37.85	13	SW1SE1	36	39		
			40.70	13	SE1SW1	36	39		
			19.40	13	SW1SW1	36	39		
			.50	14	NE1NE1	36	39		
			36.65	14	SE1NE1	36	39		
			12.95	14	SW1NE1	36	39		
			22.45	14	NE1SE1	36	39		
			.90	14	NW1SE1	36	39		
			40.00	24	NE1NE1	36	39		
			39.05	24	NW1NE1	36	39		
			13.30	24	NE1NW1	36	39		
			39.80	24	SE1NE1	36	39		
			16.55	24	SW1NE1	36	39		
			17.40	24	NE1SE1	36	39		
			24.48	18	NW1SW1	36	39		
			25.90	18	SE1SW1	36	39		
			1.35	18	SW1SE1	36	39		
			40.75	18	SW1SW1	36	39		
			10.70	19	NE1NE1	36	39		
			23.20	19	NW1NE1	36	39		
			38.85	19	NE1NW1	36	39		
			32.65	19	NW1NW1	36	39		
			36.05	19	SE1NE1	36	39		
			39.60	19	SW1NE1	36	39		
			36.75	19	SE1NW1	36	39		
			30.55	19	SW1NW1	36	39		
			38.25	19	NE1SE1	36	39		
			38.30	19	NW1SE1	36	39		
			10.30	19	NE1SW1	36	39		
			40.30	19	SE1SE1	36	39		
			19.80	19	SW1SE1	36	39		
			27.70	30	NE1NE1	36	39		
			.40	30	NW1NE1	36	39		
			2.95	30	SE1NE1	36	39		

Total..... 1,796.63

REMARKS: Reference is made to application No. 2219 granted to the applicants by the State Engineer. "Attention is also called to a legal suit of Jerry Sheehan and John G. Taylor v. S. B. Kaspar, January 5, 1916, No. 2180, tried in Winnemucca, Nevada, which has been decided in favor of Messrs. Taylor and Sheehan."

Claimant—Taylor & Sheehan, Winnemucca, Nevada.

Source—Humboldt River.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
By flooding.....	1865	1865	80.00*	20	N1NW1	36	40		
			17.65	18	NE1NE1	36	39		
			1.20	18	SE1NE1	36	39		
			24.35	19	NE1NE1	36	40		
			1.85	19	NW1NE1	36	40		
			33.70	20	NE1NW1	36	40		
			40.05	20	NW1NW1	36	40		
			39.55	20	SE1NW1	36	40		
			11.10	20	SW1NW1	36	40		
Total.....			249.45						

REMARKS: *This land is mainly irrigated by a canal from the lands owned by Madison Anderson, formerly the old Pick Anderson Estate.

Reference is made to application No. 2219 on file in the State Engineer's Office, and to a legal suit No. 2180 tried at Winnemucca, Nevada, dated January 5, 1916, of Jerry Sheehan and John G. Taylor v. S. B. Kaspar, which was decided in favor of Messrs. Taylor and Sheehan.

Claimant—Taylor & Sheehan, Winnemucca Nevada

(formerly Alphonse Bernard).

Source—Humboldt River.

Pioneer Slough.....	1870-71	1870	37.70	28	NE1NE1	36	40		
			36.75	28	NW1NE1	36	40		
			35.75	28	SE1NE1	36	40		
			4.50	22	SW1SW1	36	40		
Humboldt River by overflow or	1870-1880	1870	14.85	28	SE1NE1	36	40		
flooding. Various ditches, sloughs			33.55	28	SW1NE1	36	40		
and old channel above and below			29.80	28	NE1NW1	36	40		
the dam.			24.85	28	SE1NW1	36	40		
			32.36	28	NE1SE1	36	40		
			30.85	28	NW1SE1	36	40		
			12.10	28	NE1SW1	36	40		
			34.85	28	SE1SE1	36	40		
			19.25	28	SW1SE1	36	40		
			3.10	33	NE1NE1	36	40		
Total.....			349.76						

NOTE: The aggregate claims of irrigated areas in the following subdivision exceeds the acreage in the tract: SE1NE1, Sec. 28, T. 36 N, R. 40 E.

Claimant—Taylor & Sheehan, Winnemucca, Nevada.

Source—Pole Creek.

Pole Creek Ditches.....	1878	1878	4.80	31	NE1NE1	36	40		
			20.95	29	NW1SW1	36	40		
			.60	29	SW1NW1	36	40		
			29.75	30	SE1SE1	36	40		
			37.95	30	NE1SE1	36	40		
			27.90	30	SE1NE1	36	40		
			2.45	30	NE1NE1	36	40		
			27.05	30	SE1NE1	36	40		
			8.45	19	SW1NE1	36	40		
			34.60	19	SE1SW1	36	40		
			14.30	19	SW1SW1	36	40		
			16.10	19	NE1SW1	36	40		
			39.40	19	NW1SW1	36	40		
Total.....			263.80						

REMARKS: In 1868 water was claimed for 500 acres, but no record as to how many acres were irrigated. Some years the water supply will care for that number of acres.

Claimant—Taylor and Sheehan, Winnemucca, Nevada.

Source—Rock Creek.

Taylor & Sheehan Canal out of	1878	1878	80.00	32	N1NE1	36	40		
Rock Creek.			.70	32	SW1NW1	36	40		
			22.80	32	NE1NW1	36	40		
			31.40	32	NW1NW1	36	40		
			25.35	29	SE1SW1	36	40		
			10.25	29	SW1SE1	36	40		
			22.20	29	NW1SE1	36	40		
			37.80	29	NE1SW1	36	40		
			20.45	29	SE1NW1	36	40		
			25.25	29	SW1NW1	36	40		
			7.90	29	NW1SW1	36	40		
			40.05	29	SW1SW1	36	40		
			.75	32	SE1NW1	36	40		
Total.....			324.90						

**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 3
Humboldt River from Pinson's Bridge to Palisade, Including
ROCK CREEK AND ITS TRIBUTARIES,
In Humboldt, Lander, Eureka, and Elko Counties, Nevada**

Claimant—**Golconda Cattle Company, Layton, Utah.**

Source—**Rock Creek.**

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Rock Creek Canal and Lake Field Ditches.	1876-1880	1876	29.35	5	SW1SW1	38		47	
			9.82	6	NE1SE1	38		47	
			38.99	6	NW1SE1	38		47	
			38.10	6	SE1SE1	38		47	
			36.69	6	SW1SE1	38		47	
			40.87	6	SE1SW1	38		47	
			38.06	7	NE1NE1	38		47	
			37.00	7	NW1NE1	38		47	
			28.67	7	SE1NE1	38		47	
			39.85	7	SW1NE1	38		47	
			38.50	7	NE1NW1	38		47	
			39.17	7	NW1NW1	38		47	
			37.62	7	SE1NW1	38		47	
			38.12	7	SW1NW1	38		47	
			1.66	7	NE1SE1	38		47	
			10.02	7	NW1NE1	38		47	
			39.96	7	NE1SW1	38		47	
			39.35	7	NW1SW1	38		47	
			31.40	7	SE1SW1	38		47	
			37.50	7	SW1SW1	38		47	
			12.75	8	NW1NW1	38		47	
			1.20	8	SW1NW1	38		47	
			10.20	18	NE1NW1	38		46	
			34.85	18	NW1NW1	38		46	
			3.95	18	SE1NW1	38		46	
			16.30	18	NW1SW1	38		46	
			33.55	18	SW1NW1	38		46	
			1.25	18	SW1SW1	38		46	
			.95	13	SE1SE1	38		46	
			25.60	12	NE1SE1	38		46	
			38.94	12	SE1SE1	38		46	
			5.10	12	SW1SE1	38		46	
			40.87	18	NE1NE1	38		46	
			40.66	13	NW1NE1	38		46	
			24.27	13	SE1NE1	38		46	

*NW1SE1. †T. 38 N, R. 47 E, probably.

Claimant—**Golconda Cattle Company, Layton, Utah.**

Source—**Rock Creek.**

Rock Creek Slough.....	*Not known	1876-1880	6.80	32	NE1NE1	39		47	
			25.02	32	SE1NE1	39		47	
			7.12	32	NE1SE1	39		47	
			40.12	32	NW1SE1	39		47	
			35.25	32	SE1SE1	39		47	
			8.65	5	NW1NE1	38		47	
			8.47	5	NE1NW1	38		47	

*Perhaps 1876.

Claimant—**Golconda Cattle Company, Layton, Utah.**

Source—**Rock Creek.**

High Line Canal.....	1887	1887-88	7.62	28	NE1NW1	39		47	
			9.93	28	SE1NW1	39		47	
			19.80	28	SW1NW1	39		47	
			25.02	28	NW1SW1	39		47	
			19.82	28	SW1SW1	39		47	
			37.32	29	SE1NE1	39		47	
			40.15	29	NE1SE1	39		47	
			39.90	29	SE1SE1	39		47	
			32.45	32	NE1NE1	39		47	
			40.05	32	NW1NE1	39		47	
			40.07	32	SE1NE1	39		47	
			41.12	32	NE1SW1	39		47	
			41.42	32	SE1SW1	39		47	
			16.15	32	SW1SW1	39		47	
			40.10	31	SE1SE1	39		47	
			39.90	31	SW1SE1	39		47	
			39.87	31	SE1SW1	39		47	
			40.00	31	SW1SW1	39		47	
			37.77	6	NE1NE1	38		47	
			39.27	6	NW1NE1	38		47	
			39.55	6	NE1NW1	38		47	
			40.00	6	NW1NW1	38		47	
			10.85	6	SW1NE1	38		47	
			15.97	6	SE1NW1	38		47	
			22.12	6	SW1NW1	38		47	
			36.45	1	NE1NE1	38		46	
			19.72	1	NW1NE1	38		46	
			6.40	1	SE1NE1	38		46	

GOLCONDA CATTLE COMPANY—Continued.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
High Line Canal.....	1887	1887-88	38.17	1	NE1NW1	38	46		
			32.85	1	SE1NW1	38	46		
			40.75	1	SW1NW1	38	46		
			38.62	1	NW1NW1	38	46		
			17.77	1	NE1SW1	38	46		
			40.20	1	NW1SW1	38	46		
			8.65	1	SE1SW1	38	46		
			37.65	1	SW1SW1	38	46		
			40.75	2	NE1NE1	38	46		
			28.92	2	NW1NE1	38	46		
			40.07	2	SE1NE1	38	46		
			39.07	2	SW1NE1	38	46		
			2.35	2	SE1NW1	38	46		
			40.07	2	NE1SE1	38	46		
			40.47	2	NW1SE1	38	46		
			39.80	2	SE1SE1	38	46		
			20.87	2	SW1SE1	38	46		
			10.20	2	NE1SW1	38	46		
			31.32	11	NE1NE1	38	46		
			.77	11	NW1NE1	38	46		
			26.50	11	SE1NE1	38	46		
			8.27	11	SE1NE1	38	46		
			15.07	11	NE1SE1	38	46		
			25.62	12	NW1NW1	38	46		
			26.65*	12	NW1NW1	38	46		
			39.67	12	SW1SW1	38	46		
			41.20	13	NE1NW1	38	46		
			32.85	13	NW1NW1	38	46		
			39.75	13	SE1NW1	38	46		
			40.00	13	SW1NW1	38	46		
			40.19	13	NE1SW1	38	46		

*Should be SW1NW1 Sec. 12, T. 38 N, R. 46 E.

Claimant—Golconda Cattle Company, Layton, Utah.

Source—Rock Creek.

Barley Field Canal.....	1887	1888	3.55	11	SW1NE1	39	47		
			4.25	11	SE1NW1	39	47		
			16.85	11	NE1SW1	39	47		
			10.32	11	NW1SW1	39	47		
			22.10	11	SW1SW1	39	47		
			11.82	10	SE1SE1	39	47		
			29.32	15	NE1NE1	39	47		
			15.55	15	NW1NE1	39	47		
			.85	15	SE1NE1	39	47		
			31.65	15	SW1NE1	39	47		
			17.25	15	SE1NW1	39	47		
			7.17	15	NW1SE1	39	47		
			35.80	15	NE1SW1	39	47		
			11.15	15	SE1SW1	39	47		
			20.27	15	SW1SW1	39	47		
			16.70	22	NW1NW1	39	47		
			4.12	22	SW1NW1	39	47		
			43.22	21	NE1NE1	39	47		
			41.17	21	SE1NE1	39	47		
			39.10	21	NW1NE1	39	47		
			40.45	21	SW1NE1	39	47		
			28.17	21	NE1SE1	39	47		
			40.00	21	NW1SE1	39	47		
			33.92	21	SW1SE1	39	47		
			41.20	21	NE1SW1	39	47		
			40.47	21	NW1SW1	39	47		
			35.90	21	SE1SW1	39	47		
			35.00	21	SW1SW1	39	47		
			34.15	20	SE1NE1	39	47		
			40.55	20	NE1SE1	39	47		
			36.35	20	SE1SE1	39	47		
			5.29	28	NW1NE1	39	47		
			28.85	28	NE1NW1	39	47		
			10.80	28	NW1NW1	39	47		
			2.02	28	SE1NW1	39	47		
			19.30	28	SW1NW1	39	47		

Total..... 8.676.55

REMARKS: In the Barley Field Canal water right, much of the land is in sage, but same has been used to irrigate other lands than those named by supplying other Canals, and natural channels now used for irrigation with water. The sage as noted has been irrigated to grow grasses for the pasturing of cattle, horses, etc.

As the other canals that are fed with a water supply from the Barley Field Canal have already been covered by other proofs, such lands could not be again included under this proof. However, there is not enough water flowing down Rock Creek the entire irrigating season to furnish a full supply of water for the ranch, as Rock Creek sometimes ages dry in July.

Claimant—Golconda Cattle Company, Layton, Utah.
Source—Fraser Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Fraser Creek.....		1876-80	2.47	7	NW1NE1	39			47
			5.20	7	SW1NE1	39			47
			29.12	7	NW1SE1	39			47
			35.35	7	SW1SE1	39			47
			19.00	18	NW1NE1	39			47
			41.00	18	NE1NE1	39			47
			19.00	18	NE1SE1	39			47
			27.00	18	SE1SE1	39			47
			2.25	18	SW1NW1	39			47
			22.90	17	SW1SW1	39			47
			38.45	17	SE1SW1	39			47
			23.45	17	SW1SE1	39			47
			34.22	17	SW1SE1	39			47
			33.80	20	NW1NE1	39			47
			39.60	20	SW1NE1	39			47
			21.40*	20	NW1SE1	39			47
			23.30*	20	SW1SE1	39			47
			41.37	32	NW1SW1	39			47
			24.40	32	SW1SW1	39			47
			39.32	13	SW1NE1	39			46
			13.12	13	SE1NE1	39			46
			41.47	13	NE1SE1	39			46
			42.50	13	NW1SE1	39			46
			36.22	13	SE1SE1	39			46
			43.82	13	SW1SE1	39			46
			40.00	13	SE1SW1	39			46
			30.50	24	NE1NE1	39			46
			41.42	24	NW1NE1	39			46
			36.50	24	SE1NE1	39			46
			41.10	24	SW1NE1	39			46
			40.00	24	SE1NW1	39			46
			40.00	24	NE1NW1	39			46
			38.10	24	NE1SE1	39			46
			40.95	24	NW1SE1	39			46
			40.72	24	SE1SE1	39			46
			41.37	24	SW1SE1	39			46
			40.00	24	NE1SW1	39			46
			40.35	24	SE1SE1	39			46
			16.37	24	SW1SE1	39			46
			33.32	25	NE1NE1	39			46
			26.75	25	NW1NE1	38			42
			24.62	25	NE1NW1	38			42
			20.35	25	NW1NW1	38			42
			1.87	23	SE1SE1	38			42
			1.05	26	NE1NE1	38			42
Total.....			1,311.07						

*Not owned by company.

NOTE: The aggregate claims of the irrigated areas in the following subdivisions exceeds the acreage in the several tracts: SE1SE1 and SW1SE1, Sec. 24, T. 39 N, R. 46 E.

Claimant—Golconda Cattle Company, Layton, Utah.
Source—Willow Creek.

Willow Creek overflow from Willow Creek	Not known	1876	21.05	8	SE1SE1	38			47
			6.50	8	SW1SE1	38			47
			2.47	17	NW1NE1	38			47
			12.89	17	NE1NW1	38			47
			27.69	17	SW1NW1	38			47
			1.70	18	SE1NE1	38			47
			86.45	18	NE1SE1	38			47
			29.10	18	NW1SE1	38			47
			39.45	18	SW1SE1	38			47
			25.05	18	NE1SW1	38			47
			4.55	18	NW1SW1	38			47
			39.92	18	SE1SW1	38			47
			38.52	18	SW1SW1	38			47
			40.90	19	NW1NW1	38			47
			38.10	19	SW1NW1	38			47
			38.95	19	NW1SW1	38			47
			36.80	19	SW1SW1	38			47
			23.92	30	NW1NW1	38			*46
			2.40	30	SW1NW1	38			*46
			6.62	24	NE1NE1	38			46
			1.02	24	SE1NE1	38			46
Total.....			474.05						

*This range is probably 47 E.

REMARKS: The above data is for waters of Willow Creek that overflow its banks and irrigate the adjacent lands.

Claimant—Golconda Cattle Company, Layton, Utah.

Source—Willow Creek Reservoir.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Willow Creek Canal.....	1876	1876	1.60	8	SW1SE1	38	47		
			12.46	8	SW1SE1	38	47		
			38.90	8	SW1SW1	38	47		
			24.60	4	SE1SE1	38	47		
			3.00	4	SW1SE1	38	47		
			14.80	9	NE1NE1	38	47		
			35.07	9	NW1NE1	38	47		
			14.65	9	SW1NE1	38	47		
			18.87	9	NE1NW1	38	47		
			3.07	9	NE1NW1	38	47		
			37.40	9	SE1NW1	38	47		
			39.25	9	SW1NW1	38	47		
			4.95	9	NE1SW1	38	47		
			36.72	9	NW1SW1	38	47		
			1.40	9	SW1SW1	38	47		
			36.05	8	SE1NE1	38	47		
			38.32	8	SW1NE1	38	47		
			40.99	8	NE1NW1	38	47		
			22.62	8	NW1NW1	38	47		
			30.92	8	SE1NW1	38	47		
			33.49	8	SW1NW1	38	47		
			41.00	8	NE1SE1	38	47		
			41.87	8	NW1SE1	38	47		
			16.62	8	SE1SE1	38	47		
			32.87	8	SW1SW1	38	47		
			41.10	8	NE1SW1	38	47		
			38.40	8	NW1SW1	38	47		
			34.12	8	SE1SW1	38	47		
			40.57	8	SW1SW1	38	47		
			.97	17	NW1NE1	38	47		
			18.32	17	NE1NW1	38	47		
			34.31	17	NW1NW1	38	47		
			7.89	17	SW1NW1	38	47		
			8.62	7	SE1NE1	38	47		
			33.72	7	NE1SE1	38	47		
			21.07	7	NW1SE1	38	47		
			37.12	7	SE1SE1	38	47		
			33.62	7	SW1SE1	38	47		
			4.92	7	SE1SW1	38	47		
			37.70	18	NE1NE1	38	47		
			39.32	18	NW1NE1	38	47		
			35.86	18	SE1NE1	38	47		
			36.82	18	SW1NE1	38	47		
			26.97	18	NE1NW1	38	47		
			28.44	18	SE1NW1	38	47		
			10.37	18	NE1SW1	38	47		
			8.82	18	NW1SW1	38	47		
			.97	5	NE1NE1	38	47		
			11.52	5	NW1NE1	38	47		
			.40	5	SE1NE1	38	47		
			34.35	5	SW1NE1	38	47		
			32.32	5	NE1NW1	38	47		
			33.87	5	NW1NW1	38	47		
			32.35	5	SE1NW1	38	47		
			33.87	5	NW1NW1	38	47		
			32.35	5	SE1NW1	38	47		
			41.40	5	SW1NW1	38	47		
			23.17	5	NW1SE1	38	47		
			4.95	5	SW1SE1	38	47		
			37.44	5	NE1SW1	38	47		
			41.22	5	NW1SW1	38	47		
			4.95	5	SW1SE1	38	47		
			40.97	5	SE1SW1	38	47		
			7.92	5	SW1SW1	38	47		
			15.10	6	NE1NE1	38	47		
			40.45	6	SE1NE1	38	47		
			28.92	6	SW1NE1	38	47		
			25.12	6	SE1NW1	38	47		
			16.75	6	SW1NW1	38	47		
			27.57	6	NE1SE1	38	47		
			40.90	6	NE1SW1	38	47		
			40.05	6	NW1SW1	38	47		
			40.25	6	SW1SW1	38	47		
			3.67	1	NE1NE1	38	46		
			20.95	1	NW1NE1	38	46		
			34.62	1	SE1NE1	38	46		
			40.90	1	SW1NE1	38	46		
			3.07	1	NE1NW1	38	46		
			8.55	1	SE1NW1	38	46		
			8.55	1	SE1NW1	38	46		
			39.27	1	NE1SE1	38	46		
			25.87	1	NW1SE1	38	46		

GOLCONDA CATTLE COMPANY—Continued.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Willow Creek Canal.....	1876	1876	39.95	1	SE1SE1	38	46		
			40.00	1	SW1SE1	38	46		
			21.87	1	NE1SW1	38	46		
			1.90	1	SW1SW1	38	46		
			26.80	1	SE1SW1	38	46		
			39.12	12	NE1NE1	38	46		
			39.90	12	NW1NE1	38	46		
			35.00	12	SE1NE1	38	46		
			39.20	12	SW1NE1	38	46		
			40.97	12	NE1NW1	38	46		
			13.70	12	NW1NW1	38	46		
			40.80	12	SE1NW1	38	46		
			12.87	12	SW1NW1	38	46		
			12.57	12	NE1SE1	38	46		
			39.45	12	NW1SE1	38	46		
			33.72	12	SW1SE1	38	46		
			40.79	12	NE1SW1	38	46		
			40.42	12	SE1SW1	38	46		
			34.02	12	NW1SW1	38	46		
1876-80									

Total..... 2,662.81

REMARKS: Much of the land has been sage land, the water being turned on the sage land for the growing of grass or forage for the pasturing of cattle and sheep.

In affidavit of A. M. Dunlap he states that in 1885 that about 1,800 acres was in cultivation, 700 acres irrigated covering parts of Secs. 1 and 12, Tp. 38 N, R. 46 E, that also 1,800 acres were irrigated covering parts of Secs. 1, 12, and 13 composed as follows:

1,300 acres in alfalfa and 500 acres in grain, the latter was in 1887. This affidavit was sworn to before a Notary Public and is on file in Elko County, Nevada. Some of the water used in the canal is supplied by other canals, partly by the Barley Field and High Line canals.

NOTE: The aggregate claims of the irrigated areas of the following subdivisions exceed acreage in the several tracts: SW1SW1, Sec. 8, and NW1NW1 Sec. 5, 38 N, R. 47 E, also SE1NW1.

NOTE: For original claim of Golconda Cattle Co., including claim from Humboldt River, see pages 62 to 69 of original compilation.

**Claimant—W. T. Jenkins Co., formerly James A. Blossom,
Winnemucca, Nevada.**

Source—Humboldt River.

"Upper Canal" off of the Rocky	1873	1873	5.70	1	SW1NE1	32	45		
Point Canal, and Rocky Point			26.55	1	SE1NW1	32	45		
Canal and overflow from river.			4.47	1	SE1NW1	32	45		
			12.17	1	NW1NW1	32	45		
			40.07	1	SW1NW1	32	45		
			35.19	1	NW1SE1	32	45		
			1.00	1	SW1SE1	32	45		
			39.55	1	NE1SW1	32	45		
			40.12	1	NW1SW1	32	45		
			21.24	1	SW1SW1	32	45		
			15.79	1	SE1SW1	32	45		
			40.29	2	NE1NE1	32	45		
			40.04	2	NW1NE1	32	45		
			40.02	2	SE1NE1	32	45		
			35.12	2	SW1NE1	32	45		
			37.27	2	NE1SE1	32	45		
			39.02	2	NW1SE1	32	45		
			29.09	2	SE1SE1	32	45		
			24.89	2	SW1SE1	32	45		
			39.44	2	NE1NW1	32	45		
			40.15	2	NW1NW1	32	45		
			39.92	2	SE1NW1	32	45		
			40.07	2	SW1NW1	32	45		
			40.05	2	NE1SW1	32	45		
			40.00	2	NW1SW1	32	45		
			25.02	2	SE1SW1	32	45		
			22.77	2	SW1SW1	32	45		
			13.60	1	SE1SE1	32	45		
			6.72	1	NE1SE1	32	45		
			.45	1	NW1SE1	32	45		
			4.47	1	SW1NE1	32	45		
			5.12	1	SE1NW1	32	45		
			6.27	1	NE1NW1	32	45		
			11.45	1	NW1NW1	32	45		
			5.60	1	NW1NW1	32	45		
			7.12	1	NW1NW1	32	45		
			8.62	2	NE1NE1	32	45		
			5.55	6	NE1SW1	32	45		

Total..... 889.78

REMARKS: Water right taken out by Daniel McIntyre at Battle Mountain, March 25, 1873. Rocky Point Canal may have irrigated the entire tract, but as it is today the laterals off of the "Upper Canal" take care of the entire ranch.

**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 4**

**Comprising the Humboldt River from Palisade to Source at Wells,
Including the following Tributaries:**

**JACKSTONE CREEK
KITTEDGE CREEK
MARY'S CREEK
RABBIT CREEK**

**TOWN CREEK
SHERMAN CREEK
SHEEP CREEK
WARM SPRING CREEK**

In Elko and Eureka Counties, Nevada

Claimant—George Arthur, Carlin, Nevada.

Source—Humboldt River.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Linebarger and Arthur Ditch.....	1876	1876	Abt 80.00	33	SE½	33	52		
By Survey.....			87.76						

REMARKS: In addition to the water used from the Humboldt for irrigating this land, water is also obtained from Hot Springs in SW¼ Sec. 33, T. 33 N, R. 52 E, M. D. B. and M. This hot water is first used in bathhouse and after cooling is used for irrigation on the land above described.

Claimant—George Arthur, Carlin, Nevada.

Source—Dwyer Spring.

George Arthur Ditch.....	1876	1876	Abt 15.00	33	NE¼NE¼	33	52
By Survey, in 1914.....			3.24				

REMARKS: This acreage may have been added to from year to year, but in the year 1917 about 15 acres were irrigated from these springs.

**Claimant—Mrs. C. Glaser & Company, formerly Mrs. C. Glaser,
Halleck, Nevada.**

Source—Humboldt River.

Slough Ditch No. 1.....	1869	1869	27.50	7	SW¼	35	58
			44.80	18	NW¼	35	58
			16.60	13	NE¼	35	57
Ditch No. 2.....	1870	1870	20.00	13	NE¼	35	57
			34.50	18	NW¼	35	57
Ditch No. 3.....	1870	1870	28.90	13	NE¼	35	57
			103.50	13	NW¼	35	57
			125.00	14	NE¼	35	57
			65.00	14	NW¼	35	57
			1.00	12	SE¼	35	57
Ditch A.....	1869	1869	13.10	7	SW¼	35	58
Ditch B.....	1872	1872	34.00	7	SW¼	35	58
			13.00	18	NW¼	35	58
			40.00	12	SE¼	35	58
			39.60	18	NE¼	35	58
Ditch C.....			8.20	14	NE¼	35	58
			67.50	14	NW¼	35	58
			4.80	11	SE¼	35	58
			16.00	11	SW¼	35	58
Ditch D.....	1870	1870	20.50	14	NW¼	35	58
Slough Ditch.....	1869	1869	8.50	13	NW¼	35	58
			19.00	14	NE¼	35	58
Total.....			756.00				

Claimant—Paul Giudici, Elko, Nevada.

Source—Humboldt River.

Slough Ditch.....	1889	1889	29.93	2	SE¼NE¼	33	54
			1.78	2	NE¼SE¼	33	54
			19.53	2	SW¼NE¼	33	54
			15.23	2	NW¼SE¼	33	54
			17.97	2	NE¼SW¼	33	54
			1.25	2	NW¼SW¼	33	54
			16.49	2	SW¼SW¼	33	54
			2.66	2	SE¼SW¼	33	54
			1.15	2	SE¼NW¼	33	54
Shallow Slough Ditch.....	1889	1889	11.04	2	SW¼NE¼	33	54
			8.00	2	NE¼NW¼	33	54
			36.12	2	SE¼NW¼	33	54
			38.01	2	SW¼NW¼	33	54
			17.95	2	NW¼SW¼	33	54
			10.29	2	NE¼SW¼	33	54
Tinker's Slough and Tributaries....	1872	1872	20.37½	35	SE¼SW¼	34	54
			.75½	35	SW¼SW¼	34	54
			29.42	2	NE¼NW¼	33	54
			29.34	2	NW¼NW¼	33	54
			1.02	2	SW¼NW¼	33	54
Dam B or Dam No. 3*.....	1889	1889	16.36	2	NW¼SW¼	33	54
			2.37	2	SW¼SW¼	33	54
			1.21	2	NE¼SW¼	33	54

PAUL GIUDICI—Continued.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Dressi's Ditch.....	1890	1890	3.58	1	SW $\frac{1}{4}$ NW $\frac{1}{4}$	33		54	
			.16	1	NW $\frac{1}{4}$ NW $\frac{1}{4}$	33		54	
Through Dam C or Dam No. 1	1889	1889	14.39	1	NW $\frac{1}{4}$ NW $\frac{1}{4}$	33		54	
Ditch.†			5.50	1	SW $\frac{1}{4}$ NW $\frac{1}{4}$	33		54	
			.15	2	SE $\frac{1}{4}$ NE $\frac{1}{4}$	33		54	
Total			352.52						

REMARKS: *There is no ditch serving the above land, the said land is irrigated by means of a dam called Dam B or Dam 3 which backs the water up over the land in the spring during irrigation season and the dam is used expressly for this purpose.

Dam 2 shown on said map is used for the purposes of backing the water of said Humboldt River up to the banks of the river in order to keep the water near the top of the ground.

†There is no ditch to serve the above-described lands, but the same have been irrigated by means of natural overflow after the said Dam C or Dam 1 was put in. By raising said dam in the spring of the year the water overflows said lands and it is not necessary for a ditch or ditches.

Said dam is raised in the spring for the express purpose of irrigating said above-described lands besides having waters run into the ditches.

‡The lands herein described as being irrigated in SE $\frac{1}{4}$ SW $\frac{1}{4}$ and SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 35, Tp. 34 N, R. 54 E, M. D. B. and M, is now owned by Charles Dressi.

**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 5**

**Comprising the Following Streams Tributary to the Main
Humboldt River:**

**DEY CREEK
HOT CREEK
PINE CREEK**

**SMITH CREEK
TROUT CREEK
WILLOW CREEK**

All in Eureka County, Nevada.

**Claimant—Belle B. Ennor, Hurburt B. Ennor, and Sarah P. Ennor,
Grand Junction, Mesa County, Colorado.**

Source—Pine Creek and springs and swamps in the vicinity thereof.

EXTRACTS FROM AMENDED CLAIM—From Pine Creek and springs and swamps in the vicinity thereof. It is intended to claim by this proof all of the water developed or flowing from the springs and swamps now and formerly on the Ennor ranch, said ranch comprising Section 17, the west half of the northwest quarter of Section 16, the east half of Section 8, and the south-east quarter of Section 5, all in Township 30 North, Range 52 East, in Pine Valley, Eureka County, Nevada.

That said appropriation was made through ditches Nos. 1, 2, 3, 4, 5, 5-A, 5-B, 5-C, 6, 7, 7-A, 8 and 9.

Belle B. Ennor and Hurburt B. Ennor, being first duly sworn, depose and say: That the facts relative to the appropriation of water by claimants and their grantors are full and correct to the best of their knowledge and belief and that said facts consist of certain statements of claim made on about the 18th day of February, 1915, and a supplemental and amendatory statement made July 6, 1918, and filed herewith, together with the statement herein made, all of which statements and claims are to be considered together.

The water was used for irrigation by the claimants or their grantors first in 1865 or 1866 and the appropriation and development of the said water has continued concurrently with a beneficial use thereof, with reasonable diligence and enlargement of rights to the present time, as set out in the statements hereinbefore referred to.

That the water claimed has been used for irrigation each and every year since the right was initiated, except during the years 1910 and 1911, the full water right was not used; that this period followed a disastrous flood in Pine Valley which destroyed the railroad and rendered it impossible for the claimants to carry on said ranch during those years.

That claimant's water right was the first recorded in Eureka County, and was recorded on page 566, in Book "B" of Miscellaneous Records, being claim for all water flowing in Pine Creek.

That the claimants are the prior appropriators of all the water in Pine Creek which reaches to claimants' ranch and have developed on their own ranch most of said water from springs and swamps therein located, which water would otherwise have been waste and of no use or value to any one, as more fully set out in the sworn statement hereto attached.

OFFICE NOTE: For claim "made on about the 18th day of February, 1915, referred to herein, see page 92 of Humboldt River compilation of March 1, 1916, herewith.

**Claimant—J. P. Raine Estate, by B. F. Raine, Administrator,
Palisade, Nevada.**

Source—Dry Creek or Padelford Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Pine Creek Ditch. (Water from Dry Creek is also used through the Pine Creek Ditch in connection with the water from Pine Creek.)	1868	1898	14.96	20	NE1NW1	31		52	
			19.98	20	SE1NW1	31		52	
			4.20	20	SW1NE1	31		52	
			9.96	20	NW1SE1	31		52	
			7.52	20	NE1SW1	31		52	
			15.58	20	SE1SW1	31		52	
			22.64	20	SW1SE1	31		52	
			37.13	29	NW1NE1	31		52	
Dry Creek Ditch No. 1.....	1870	1870	15.24	29	NE1NW1	31		52	
			9.70	29	SE1NW1	31		52	
			23.10	29	SW1NE1	31		52	
			6.55	29	SE1NE1	31		52	
Dry Creek Ditch No. 2.....	1898	1898	5.61	29	SW1NE1	31		52	
			15.00	29	NW1SE1	31		52	
Total.....			207.07						

REMARKS: The 15 acres shown under date of 1898 was irrigated until 1903, when it was abandoned and has since grown up to brush. From 1903 to 1911 any surplus water from Dry Creek not used on the land shown on this proof under date of 1870 was used in conjunction with Pine Creek when said Pine Creek was low. In 1911 the 21.36 acres of land lying in the NE1SE1 of Sec. 29, as shown on the map was first put under cultivation, thereby consuming the flow of Dry Creek. An orchard of 15.37 acres is shown on the map, but this has now grown up to brush and has not been irrigated since 1899.

All surplus water of Dry Creek not required on the higher irrigated land is diverted into the Pine Creek Ditch where same crosses the channel of Dry Creek and is used in conjunction with water of Pine Creek on the land described above.

OFFICE NOTE: For complete original claim by J. P. Raine, see original compilation of March, 1916, pages 93 and 94.

Claimant—C. H. Rand, Palisade, Nevada.

Source—Trout Creek and Pine Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
A dam and ditch known as the	Prior to 1872	1871	25.00	20	SW $\frac{1}{4}$ SE $\frac{1}{4}$	30	52		
West Side Ditch.*			30.00	20	NE $\frac{1}{4}$ SE $\frac{1}{4}$	30	52		
			30.00	20	SE $\frac{1}{4}$ NE $\frac{1}{4}$	30	52		
			5.00	20	SW $\frac{1}{4}$ NE $\frac{1}{4}$	30	52		
			20.00	20	NE $\frac{1}{4}$ NE $\frac{1}{4}$	30	52		
			40.00	20	SE $\frac{1}{4}$ SW $\frac{1}{4}$	30	52		
			40.00	20	NE $\frac{1}{4}$ SW $\frac{1}{4}$	30	52		
			89.00	20	NW $\frac{1}{4}$ SE $\frac{1}{4}$	30	52		
			4.00	20	SW $\frac{1}{4}$ NE $\frac{1}{4}$	30	52		
			8.00	21	NW $\frac{1}{4}$ SW $\frac{1}{4}$	30	52		
			33.00	21	SW $\frac{1}{4}$ NW $\frac{1}{4}$	30	52		
			20.00	29	N $\frac{1}{4}$ NE $\frac{1}{4}$	30	52		
Total			294.00						

REMARKS: *The water to irrigate the above-described lands is diverted from Trout Creek, and carried through a ditch, and then emptied into the natural channel of Pine Creek, and carried a short distance in this channel and again taken out of this natural channel in a continuation of this ditch known as the West Side Ditch.

Claimant claims sufficient water of Pine Creek, together with the water of Trout Creek to irrigate the land shown to be under and irrigated by said West Side Ditch.

Claimant—C. H. Rand, Palisade, Nevada.

Source—Trout Creek.

Dam and ditch known as the	East	Prior to 1872	1871	47.00	20	S $\frac{1}{4}$ SE $\frac{1}{4}$	30	52
Side Ditch.				8.00	20	SE $\frac{1}{4}$ SE $\frac{1}{4}$	30	52
				10.00	20	NE $\frac{1}{4}$ SE $\frac{1}{4}$	30	52
				22.00	21	SW $\frac{1}{4}$ SW $\frac{1}{4}$	30	52
				60.00	29	N $\frac{1}{4}$ NE $\frac{1}{4}$	30	52
				32.00	21	NW $\frac{1}{4}$ SW $\frac{1}{4}$	30	52
				7.00	21	SW $\frac{1}{4}$ NW $\frac{1}{4}$	30	52
South Ditch		1878	1880	46.00	29	N $\frac{1}{4}$ SE $\frac{1}{4}$	30	52
Willard Ditch and Dam			1880	34.00	29	N $\frac{1}{4}$ SE $\frac{1}{4}$	30	52
Total				266.00				

OFFICE NOTE: In the above compilation the original and amended claims of C. H. Rand are combined.

**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 7**

**Comprising the South Fork of the Humboldt River and
Tributaries.**

In Elko and White Pine Counties, Nevada.

Claimant—Ella Adams by Chris Scott,* Lee, Nevada.

Source—Little Cottonwood and Smith Creeks, Tributaries of the Humboldt River.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Scott and Adams Ditch No. 1.....	1873	1873	Abt 40.00	19	NW1SE1	30	57		
		1873-76	50.00	19	NE1SW1	30	57		
		1876-1900	105.25	19	NW1SW1	30	57		
Total.....			195.25						

From Proof: *"Deponent was formerly the partner of Ella Adams in the ownership of this property and is still manager of said property and as such is more familiar and better informed than the owner concerning these facts."

"This land is irrigated from both Little Cottonwood and Smith Creek, but the waters of Little Cottonwood cease to flow in sufficient quantities about the first of June, and during the remainder of the season Smith Creek alone supplies the water for irrigating this land. It was for this reason that the ditch from Smith Creek was constructed."

OFFICE NOTE: The subdivisions as stated in the proof aggregate 120 acres, while the total acreage given is 195.25 acres.

"This proof is filed as supplemental to proof filed heretofore." Reference is made to claims heretofore filed on page 150 of Abstract of Claims compiled in March, 1916.

Claimant—Arnot and Hanna, Hylton, Nevada.

Source—Smith and Cottonwood Creeks.

Cottonwood Creek used as main ditch in conjunction with various laterals taking out thereof.	1886	1886	27.50	16	NE1NE1	30	56
		1886	35.00	16	NW1NE1	30	56
		1887	21.00	16	NE1NW1	30	56
		1887	19.00	9	SE1SW1	30	56
		1887	12.00	9	SW1SW1	30	56
		1887	5.00	9	SW1SW1	30	56
		1887	2.50	9	SE1SW1	30	56
		1900	4.00	16	NE1NE1	30	56
		1900	31.80	15	NW1	30	56
		1900	25.20	15	SW1	30	56
		1900	14.00	16	NE1NW1	30	56
		1900	3.00	16	NW1NE1	30	56
		1909	9.50*	15	SW1NW1	30	56
		1909	63.00	15	SW1SW1	30	56
		1909	20.50	9	SW1SW1	30	56
		1909	40.00	16	NW1NW1	30	56
		1909	5.00	16	NE1NW1	30	56
Total.....			338.00				
By Survey.....			61.10	9	S1SW1	30	52
			2.00	9	N1SW1	30	52
			135.20	16	NE1	30	52
			116.30	16	NW1	30	52
			4.20	16	E1SW1	30	52
			63.30	16	SE1	30	52
			36.80	15	NW1	30	52
			78.20	15	SW1	30	52
Total.....			500.10				

Claimant—Drown Brothers, by Arthur Drown, Lee, Nevada.

Source—Pearl Creek and two unnamed creeks.

Ditches Nos. 1, 3, 4, 5 and 6, and Pearl Creek Ditch.	1872&1875	1872	3.78	21	SE1NE1	31	57
			25.96*	21	SW1NE1	31	57
			14.14	21	SW1NE1	31	57
			26.75*	21	SE1NW1	31	57
			8.94	21	SE1NW1	31	57
			1.65	21	SW1NW1	31	57
			37.29*	21	NE1SE1	31	57
			2.71	21	NE1SE1	31	57
			23.18*	21	NW1SE1	31	57
			16.82	21	NW1SE1	31	57
			37.71	21	SE1SE1	31	57
			2.79*	21	SE1SE1	31	57
			33.33	21	SW1SE1	31	57
			6.67*	21	SW1SE1	31	57
			16.58*	21	NE1SW1	31	57
			23.42	21	NE1SW1	31	57
			19.47	21	NW1SW1	31	57
			34.71	21	SE1SW1	31	57
			5.29*	21	SE1SW1	31	57

DROWN BROTHERS—Continued.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Ditches Nos. 1, 3, 4, 5 and 6. and Pearl Creek Ditch.	1872&1875	1872	29.49	21	SW1SW1	31	57		
			9.86*	21	SW1SW1	31	57		
			26.66	27	NW1NW1	31	57		
			14.85*	27	NW1NW1	31	57		
			24.38*	27	NE1NW1	31	57		
			8.76	27	NE1NW1	31	57		
			2.80	27	SE1NW1	31	57		
			37.40*	27	SE1NW1	31	57		
			32.37*	27	SW1NW1	31	57		
			7.63	27	SW1NW1	31	57		
			11.12	27	NE1SW1	31	57		
			.22	27	NW1SE1	31	57		
			26.87	28	NE1NE1	31	57		
			13.13†	28	NE1NE1	31	57		
			14.50†	28	NW1NE1	31	57		
			25.49	28	NW1NE1	31	57		
			40.00	28	SE1NE1	31	57		
			.75†	28	SW1NE1	31	57		
			39.25	28	SW1NE1	31	57		
			27.24†	28	NW1NW1	31	57		
			12.76	28	NW1NW1	31	57		
			33.39	28	NE1NW1	31	57		
			6.61†	28	NE1NW1	31	57		
			.54	28	SW1SW1	31	57		

Total.....	785.84
*Sage pasture.....	344.46
†Culture.....	440.88

NOTE: Pearl Creek Ditch constructed in 1875 and others in 1872.

Claimant—Drown Bros., by Arthur Drown, Lee, Nevada.

Source—South Fork of Humboldt River.

Drown Ditch No. 1.....	1900	1900	125.00	11	S1	31	56
		1904	204.00	10		31	56
		1906	105.00	10		31	56
		1914*	132.20	15		31	56
		1918	520.00	9		31	56
Drown Ditch No. 2.....	1866	1866	120.00	11	SE1.		
					E1NW1	31	56
Drown-Clayton Bros. Ditch.....	1904	1904	300.00	22	S1	31	56
		1916*	90.40	15	SW1	31	56
		1918*	390.00	15	NE1NW1	31	56
		1918*	320.00	23	N1	31	56
Unnamed ditches.....	1890	1870	82.20	11	S1NE1& N1SE1	31	56
Total.....			2,388.80				

NOTE FROM PROOF: The maximum acreage irrigated in any year by Ditch No. 1 was 434 acres.

The maximum acreage irrigated in any year by Drown-Clayton Bros. Ditch was 390.4.

OFFICE NOTE: *Additions in amended proofs over and above the claims tendered for filing prior to the compilation of March, 1916.

Claimant—Drown Bros., by Arthur Drown, Lee, Nevada.

Source—Branch South Fork of Humboldt River.

Ditch No. 2 of Clayton-Drown Ditch.....	1894	1894	19.43	21	NE1NW1	31	57
			16.42	21	NW1	31	57
			23.58*	21	NW1	31	57
			20.57*	21	NE1NW1	31	57
			4.31	21	SE1	31	57
			38.45	21	SW1	31	57
			20.53	21	NW1SW1	31	57
			.66	21	SW1	31	57
Total.....			143.95				

*Sage pasture.

Claimant—Pearl Toyn, by Arthur Toyn, Lee, Nevada.

Source—Willow Creek.

Ditch No. 1.....	1902	1902	9.09	3	NW1NW1	30	56
			9.42	34	SW1SW1	31	56
			13.64	33	SE1SE1	31	56
			1.50	33	NE1SE1	31	56
			.18	33	SE1SE1	31	56

PEARL TOYN—Continued.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Ditch No. 2.....	1902	1902	12.17	3	NE1NW1	30		56	
Ditch No. 3.....	1902	1902	2.01	3	NW1NE1	30		56	
			8.94	3	NE1NW1	30		56	
			3.65	3	NW1NW1	30		56	
Ditch No. 4.....	1903	1903	18.68	3	NW1NE1	30		56	
Ditch No. 5.....	1875	1875	1.21	33	SE1SE1	31		56	
			9.99	33	SW1SE1	31		56	
			8.24	33	NW1SE1	31		56	
			9.14	33	NE1SW1	31		56	
			14.56	33	SE1SW1	31		56	
Ditch No. 6.....	1875	1875	7.40	4	SW1NW1	30		56	
			17.31	4	NE1NW1	30		56	
			1.04	4	NW1NW1	30		56	
			.21	4	SE1NW1	30		56	
			1.72	4	NW1NW1	30		56	
			3.63	5	NE1NE1	30		56	
Ditch No. 7.....	1875	1875	10.00	33	SE1SW1	31		56	
Ditch No. 8.....	1903	1903	1.66*	4	NE1NW1	30		56	
			2.17*	4	SE1NW1	30		56	
			11.45*	4	SW1NW1	30		56	
			2.82*	5	SE1NE1	30		56	
			2.09*	5	NE1NE1	30		56	
Ditch No. 10†.....	1904	1904	14.92	33	SW1SE1	31		56	
			8.18	33	SE1SW1	31		56	
Ditch No. 11.....	1875	1875	11.95	33	SE1SE1	31		56	
			3.55	4	NE1NE1	30		56	
			.82	3	NW1NW1	30		56	
			2.41	4	NW1NE1	30		56	
			8.66	33	SW1SE1	31		56	
			1.18	33	SE1SW1	31		56	
			2.36	4	NE1NW1	30		56	
Ditch No. 12.....	1904	1904	1.75	33	SW1SE1	31		56	
Total.....			289.70						

*Land was formerly irrigated by old ditch taken out in 1880 and abandoned and new ditch taken out as above indicated.

†This is a ditch to catch water from ditch No. 11 and distribute it over irrigated lands.

Claimant—Pearl Toyn, by Arthur Toyn, Lee, Nevada.

Source—Toyn Springs.

Toyn Ditch.....	1880	1880	10.18	33	NW1SE1	31		56	
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Claimant—Hylton and Bolton, Hylton, Nevada.

Source—Branch of South Fork of Humboldt River.

Kleckner Ditch.....	1894	1894	127.00†	14&15		31		57	
			180.50*	14&15		31		57	
Total.....			257.50						

*Meadow.

†Sage and rye-grass pasture.

Claimant—Hylton and Bolton, Hylton, Nevada.

Source—South Fork of Humboldt River.

Clayton and Drown Ditch.....	1904	1904	5.00*	16	SW1SW1	31		57	
			8.00*	21	NW1NW1	31		57	
Total.....			13.00						

*Brush and grass pasture.

Claimant—Hylton and Bolton, Hylton, Nevada.

Source—North Branch of South Fork of Humboldt River.

Peterson Ditch.....	1872	1872	43.60	16		31		57	
			49.00	16		31		57	
			30.00	17		31		57	
Total.....			122.60						

OFFICE NOTE: The areas shown under the above claimants are listed under claim of J. J. Hylton, page 141, in Abstract of Claims compiled in March, 1916.

**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 8**

**Comprising Lamoille and Talbot Creeks and their Tributaries.
In Elko County, Nevada.**

Claimant—Jacob Conrad, Lamoille, Nevada.

Source—Conrad Creek, Tributary of Talbot Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Orchard Ditch.....	1883	1883	1.00	21	SE½	33		58	
		1885	2.00	21	SE½	33		58	
South Garden Ditch.....	1886	1886	6.00	21	SE½	33		58	
Truman or Conrad Ditch.....	1875	1875	15.00	22	SW½	33		58	
		1885	20.00	22	SW½	33		58	
		1887	10.00	22	SW½	33		58	
		1901	55.00	21	NE½&SE½	33		58	
		1904	26.00	22	NE½	33		58	
Total.....			135.00						

Claimant—Samuel Cook, Elko, Nevada.

Source—Spring Creek and Little Rabbit Creek and Hennen's waste water.

Spring Creek and Bellinger Ditch..	1878	80.00	16	NW½	33	57
		16.75	8	SE½	33	57
		28.75	8	SE½	33	57
		14.06	9	SW½	33	57
		1.07	17	NE½	33	57
		18.80	17	NE½	33	57
		4.00	16	NW½	33	57
		24.10	16	NW½	33	57
		1.96	16	NW½	33	57
		3.50	16	NW½	33	57
		1.00	16	NW½	33	57
		3.10	16	NW½	33	57
		.50	16	SW½	33	57
		4.50	16	SW½	33	57
		1.80	16	SE½	33	57
		1.00	16	SW½	33	57
Total.....		214.89				

FROM PROOF: The maximum acreage irrigated in any year was 136 to about 160 acres.

Claimant—Chas. W. Olubine, Lamoille, Nevada.

Source—Talbot Creek.

FROM PROOF: This is an amended claim, to correct an error in the date of the appropriation of water on the NE½ of Section 16 and SW½ of SE½ of Section 9, all in Tp. 33 N. R. 58 E. M. D. M. (See page 165 Abstract of Claims.) From the said abstract it appears that 38 acres in the NE½ of said Section 16, and 10.8 acres in the SW½ of SE½ of said Section 9 were first irrigated in 1907; this is an error, these lands were sown to grain in the year 1904, but they had been in pasture from the year 1897, and water was appropriated from Talbot Creek in that year or before to irrigate the same, and the date of appropriation should run from that date, and the year 1907 in said claim should be corrected to 1904 for the cultivation of said land in grain. The undersigned claimant asks that said original claim be amended as herein set forth, and that when the same is allowed that it conform to the facts herein set forth.

OFFICE NOTE: For original claim referred to, see page 165, compilation of March, 1916.

Claimant—Mrs. C. Glaser & Company, Halleck, Nevada.

Source—Lamoille Creek.

Ditch No. 1.....	1880	1880	70.20	18	NE½	35	58
			97.80	18	NW½	35	58
			7.60	18	SW½	35	58
			48.90	13	NE½	35	58
			13.00	13	SE½	35	58
			35.30	13	SW½	35	58
			14.60	14	SE½	35	58
			16.60	14	SW½	35	58
Lamoille Ditch.....	1893	1893	89.80	18	NE½	35	58
			143.20	18	SW½	35	58
			16.20	13	SW½	35	58
Lamoille Creek Ditch.....	1893	1893	134.00	14	SE½	35	58
			95.80	13	SE½	35	58
			70.10	13	SW½	35	58
Total.....			857.60				

Claimant—Mrs. C. Glaser & Co., Halleck, Nevada.

Source—Rabbit Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Glaser Ditch or Rabbit Creek Ditch.....	1884	1870	47.70	18	SE $\frac{1}{4}$	35		57	
			36.60		SW $\frac{1}{4}$	35		57	
Ditch No. 2, by Q. D. Boyd.....		1870	204.00	1	W $\frac{1}{2}$	34		57	
				36	S $\frac{1}{2}$ SW $\frac{1}{4}$	35		57	
				2	W $\frac{1}{2}$ SE $\frac{1}{4}$	34		57	
Total.....			288.30						

It is claimed, "that the water was first used for irrigation by claimant or its grantors in the year 1870, when approximately 800 acres were irrigated, but that on account of the diminution of the waters of said Rabbit Creek claimant has been able to irrigate only eighty-four and three-tenths acres during the past ten years, and to show that the additional number of acres first irrigated in subsequent years, as shown under Section 14 of said proof of appropriation, should date from the year 1870 instead of the year 1885, and further that the proof of appropriation of Q. D. Boyd, which shows irrigation of lands under Ditch No. 2, be considered as the proof of claimant for its water right to the waters of Rabbit Creek for the lands hereinabove described."

OFFICE NOTE: For claim of Q. D. Boyd referred to, see page 164, compilation of March, 1916.

Claimant—David Morrow, Lamaille, Nevada.

Source—Talbot Creek.

Thorp Ditch.....	1871	1871	10.00	16	E $\frac{1}{2}$ SW $\frac{1}{4}$	33		*38	
		1873	5.00	16	E $\frac{1}{2}$ SW $\frac{1}{4}$	33		58	
		1876	5.00	16	E $\frac{1}{2}$ SW $\frac{1}{4}$	33		58	
		1892	17.00	16	E $\frac{1}{2}$ SW $\frac{1}{4}$	33		58	
		1900	17.00	16	E $\frac{1}{2}$ SW $\frac{1}{4}$	33		58	
Morrow Ditch, formerly Thorp Ditch No. 2.....	1900	1904	8.00	16	E $\frac{1}{2}$ SW $\frac{1}{4}$	33		58	
Total.....			62.00						

REMARKS: This amended proof is not to affect any water right for land other than the E $\frac{1}{2}$ of SW $\frac{1}{4}$ of Section 16, Tp. 33 N, R. 58 E.

*This is probably 58 E.

Claimant—John McKinney, Lamaille, Nevada.

Source—Talbot Creek.

Dam and Ditch No. 6.....	1871	1871	18.00	8	SE $\frac{1}{4}$	33		58	
Dam and Ditch No. 4.....	1868	1868	20.00	8	SE $\frac{1}{4}$	33		58	
McKinney Ditch.....	1887	1887	30.00	8	SE $\frac{1}{4}$	33		58	
Dam and Ditch No. 5 Garden Ditch..	1868	1871	5.00	8	SE $\frac{1}{4}$	33		58	
Swamps, Dams and Ditches Nos. 1, 2, and 3.	1871	1871	80.00	8	SE $\frac{1}{4}$	33		58	
Total.....			153.00						

Claimant—C. E. Noble, Lamaille, Nevada.

Source—Talbot Creek.

Harvey Ditch.....	1875 or earlier	1875 or earlier	25.00	28	NE $\frac{1}{4}$	33		58	
		1876	10.00	28	NE $\frac{1}{4}$	33		58	
		1878	20.00	28	NE $\frac{1}{4}$	33		58	
		1880	23.00	28	NE $\frac{1}{4}$	33		58	
		1880	18.00	28	SE $\frac{1}{4}$	33		58	
		1887	20.00	28	NE $\frac{1}{4}$	33		58	
		1896	7.00	28	NE $\frac{1}{4}$	33		58	
Total.....			123.00						

OFFICE NOTE: For complete original claims of Chas. E. Noble see compilation of March, 1916, pages 172 and 173.

Claimant—Webster Patterson, Elko, Nevada.

Source—Lamoille Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
The Streeter Ditch, and Dorsey Ditches Nos. 1, 2, 3, 4, 5.	1867	1867	158.20	7	NE $\frac{1}{4}$	33		58	
			120.00	7	SW $\frac{1}{4}$	33		58	
			40.00*	7	SW $\frac{1}{4}$	33		58	
			80.00	7	NW $\frac{1}{4}$	33		58	
			80.00*	7	NW $\frac{1}{4}$	33		58	
Patterson Ditch, thence through laterals.	April, 1867	1867	160.00	18	NE $\frac{1}{4}$	33		58	
			158.20	17	SW $\frac{1}{4}$	33		58	
			158.20	17	NW $\frac{1}{4}$	33		58	
			79.10	8	SW $\frac{1}{4}$	33		58	
			160.00	7	SE $\frac{1}{4}$	33		58	
			160.00	18	SE $\frac{1}{4}$	33		58	
Total.....								1,863.70	

NOTE: *Pasture.

REMARKS: "Patterson" Ditch comprises what was known as and called the Walker and Waterman Ditch, the Odell Ditch and the "Jewett" Ditch.

Through a decree and judgment of the District Court of the Fourth Judicial District of the State of Nevada, the W $\frac{1}{2}$ of Sec. 17, the E $\frac{1}{2}$ of Sec. 18, and S $\frac{1}{2}$ of SW $\frac{1}{4}$ of Sec. 8, T. 33 N. R. 58 E. M. D. B. & M., is entitled to the following amounts of water from Lamoille Creek: 2/5 of the first 50 inches of water of said creek, of the next 292 2/8 inches of water, 53 1/3 inches thereof, and of the next 1,492 inches of water, 264 inches thereof.

Claimant—James B. Stewart, Lamoille, Nevada.

Source—Sites or Rabbit Creek.

Meyers Ditch No. 2 and No. 4, and Springs.	1872-1890*	1914†	39.00	11	NW $\frac{1}{4}$	33		57	
			33.10	11	NE $\frac{1}{4}$	33		57	
Total.....								72.10	

*Ditch No. 2 was constructed in 1872, Ditch No. 4, and Springs in 1890.

†First used by previous grantors in 1873.

OFFICE NOTE: For claim of appropriation of water by J. E. Meyers for land above described see compilation of March, 1916, page 172. No transfer has been filed in this office of water right from J. E. Meyers to James B. Stewart.

Claimant—Charles M. and Albert Trescartes, Lamoille, Nevada.

Source—Lamoille Creek.

Jewett Ditch, also known as Trescartes-Noble Ditch.	1900	1899	25.90	25	SW $\frac{1}{4}$	33		57	
			30.00	25	NW $\frac{1}{4}$	33		57	
		1901	24.00	25	NW $\frac{1}{4}$	33		57	
		1902	25.90	25	SW $\frac{1}{4}$	33		57	
			1.30	25	SE $\frac{1}{4}$	33		57	
			78.60	24	NE $\frac{1}{4}$	33		57	
		1904	3.50	24	SE $\frac{1}{4}$	33		57	
			17.60	24	SE $\frac{1}{4}$	33		57	
		1905	32.50	24	SE $\frac{1}{4}$	33		57	
			.60	24	NE $\frac{1}{4}$	33		57	
			7.10	24	SE $\frac{1}{4}$	33		57	
			.30	24	NE $\frac{1}{4}$	33		57	
		1907	57.90	24	SE $\frac{1}{4}$	33		57	
			1.30	24	NE $\frac{1}{4}$	33		57	
		1911	46.80	26	NE $\frac{1}{4}$	33		57	
			6.20	26	NW $\frac{1}{4}$	33		57	
			12.00	26	E $\frac{1}{2}$ NE $\frac{1}{4}$	33		57	
			22.00	26	NW $\frac{1}{4}$	33		57	
		1912	17.10	26	NE $\frac{1}{4}$	33		57	
			48.60	26	NW $\frac{1}{4}$	33		57	
		1913	27.00	24	SE $\frac{1}{4}$	33		57	
		1915	30.00	26	NW $\frac{1}{4}$	33		57	
		1916	30.00	26	NW $\frac{1}{4}$	33		57	
		1917	29.00	26	NW $\frac{1}{4}$	33		57	
Total.....								575.00	

FROM PROOF: You will note that 55.90 acres were irrigated in 1899, one year prior to the time when the ditch was taken out; these 55.90 acres got the water out of the Paddy Ryan Ditch in 1899.

A permit was granted in 1915 to transfer the water from Sec. 25, T. 33 N. R. 57 E., to the north half of Sec. 26, T. 33 N. R. 57 E. This permit was sent to Washington, D. C., with proof of Desert Claim, and has not yet been returned.

Another permit was granted some time ago to appropriate waters for Sec. 25 from which the waters had been transferred.

The proofs submitted herein include those already on record and published in Abstract of Claims to the Waters of the Humboldt River and its Tributaries, as well as proofs of later appropriations.

Claimant—Albert Trescartes, Lamoille, Nevada.

Source—Swamps and Springs.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Swamp Ditch No. 1.....	1892	1892	5.20	26	NE½	33		57	
Ditch No. 2.....	1898	1898	4.10	26	NE½	33		57	
			17.90	26	NE½	33		57	
Total.....			27.20						

Claimant—Albert Trescartes, Lamoille, Nevada.

Source—Little Rabbit Creek.

Dam and Ditches.....	1900	1900	20.00	26	NE½	33		57	
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Claimant—Albert Trescartes, Lamoille, Nevada.

Source—Rabbit Creek.

Dam and Ditch.....	1898	1898	17.00	26	NE½	33		57	
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Claimant—Harry Trott, Lamoille, Nevada.

Source—Talbot Creek.

Gilland West Ditch.....	1873	1879	30.00	8	NE½	33		58	
West Ditch.....	1873	1879	60.00	8	NE½	33		58	
Gilland East Ditch.....	1873	1873	30.00	8	NE½	33		58	
		1876	30.00	8	NE½	33		58	
McKenney and Trott Ditch.....	1900	1902	40.00	8	NW½	33		58	
Fixley and Gilland Ditch.....	1873	1896	5.00	8	NW½	33		58	
		1900	25.00	8	NW½	33		58	
Total.....			220.00						

*Probably 58 E.

Claimant—Frank Wiggins, Lamoille, Nevada.

Source—Beaver or Thorpe Creek.

Leberaki No. 2 Ditch.....	1869	1869	9.50	9	SE½	33		58	
			58.90	9	NE½	33		58	
			1.90*	9	NE½	33		58	
Leberaki-Truman Ditch.....	1872	1872	8.00	9	NW½	33		58	
			11.00	9	NE½	33		58	
Frankie Ditch.....	1872	1872	40.00	9	SE½	33		58	
			15.00	9	NE½	33		58	
		1875	15.20	9	NE½	33		58	
		1900	7.00	9	NE½	33		58	
Ditch No. 7.....	1882	1882	3.00	9	SE½	33		58	
Ditch No. 3.....	1898	1898	29.30	15	NW½	33		58	
				9	SE½	33		58	
			10.00	15	NW½	33		58	
			14.10	9	E½SE½	33		58	
Ditch No. 4.....	1898	1898	22.90	10	SW½	33		58	
			8.30	10	SW½	33		58	
Ditch No. 5.....	1898	1898	14.00	10	SW½SW½	33		58	
Total.....			268.10						

*Pasture.

OFFICE NOTE: These amended claims except two minor changes are duplicates of original findings.

**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 9**

**Comprising Streams in Starr and Secret Valleys which are
Tributary to the Humboldt River.**

In Elko County, Nevada.

Claimant—C. H. Black, Deeth, Nevada.

Source—Ackler Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Davis Ditch No. 1.....	1896	1896-1901	11.10	10	SE $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
			3.60	10	SW $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
			3.80	10	NW $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
			1.80	10	NE $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
		1898	5.00	10	SE $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
Davis Ditch No. 2.....	1894	1895	7.70	10	NW $\frac{1}{4}$ SE $\frac{1}{4}$	36	60		
			8.80	10	NE $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
			9.00	10	SE $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
			.50	10	SW $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
		1892*	9.60	10	SE $\frac{1}{4}$ NW $\frac{1}{4}$	36	60		
		1895	8.80	10	NE $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
			7.70	10	NW $\frac{1}{4}$ SE $\frac{1}{4}$	36	60		
			.50	10	SW $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
Davis Ditch No. 3.....	1894	1894	2.40	10	SW $\frac{1}{4}$ SE $\frac{1}{4}$	36	60		
			1.00	10	SE $\frac{1}{4}$ SE $\frac{1}{4}$	36	60		
Davis Ditch No. 5.....	1895	1896	6.90	10	NW $\frac{1}{4}$ SE $\frac{1}{4}$	36	60		
			5.40	10	SW $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
Total.....			92.60						

*This land was irrigated before Davis Ditch was constructed from other ditches.

Claimant—C. H. Black, Deeth, Nevada.

Source—Harder Creek.

Redden & Black Ditch.....	1898	1906	19.40	4	NW $\frac{1}{4}$ NW $\frac{1}{4}$	36	60		
			2.70	4	NE $\frac{1}{4}$ NW $\frac{1}{4}$	36	60		
		1908	15.00	4	NW $\frac{1}{4}$ NW $\frac{1}{4}$	36	60		
		1909	15.00	4	NE $\frac{1}{4}$ NW $\frac{1}{4}$	36	60		
McMullen Ditch.....	1872	1872	15.00	4	SW $\frac{1}{4}$ SE $\frac{1}{4}$	36	60		
		1875	12.00	4	SW $\frac{1}{4}$ SE $\frac{1}{4}$	36	60		
		1875-77	20.00	4	NE $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
		1875-80	20.00	4	NW $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
		1880-95	17.80	4	NE $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
		prior to 1879	14.50	4	NW $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
		1880	5.00	4	NW $\frac{1}{4}$ SW $\frac{1}{4}$	36	60		
		1881	30.00	4	S $\frac{1}{4}$ NW $\frac{1}{4}$	36	60		
		1894-1902	31.60	4	S $\frac{1}{4}$ NW $\frac{1}{4}$	36	60		
		1895	12.50*	4	SW $\frac{1}{4}$ SE $\frac{1}{4}$	36	60		
		1895	10.60*	4	SE $\frac{1}{4}$ SE $\frac{1}{4}$	36	60		
Total.....			241.10						

FROM PROOF: The last two mentioned parcels of land were irrigated from old ditches and was cleared and cultivated prior to the year 1900. 19 acres in the S $\frac{1}{4}$ SE $\frac{1}{4}$ partly irrigated prior to 1872; and all irrigated in 1880; all in cultivation in 1900.

The land in the S $\frac{1}{4}$ NW $\frac{1}{4}$ shown as irrigated under application was also irrigated by old ditch. Cultural map does not show acreage irrigated by old ditches. Total, 260.10.

Claimant—W. J. Black, Deeth, Nevada.

Source—Branch of Ackler Creek.

Ditches Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14.	1872	1872	25.60	8	SE $\frac{1}{4}$ NW $\frac{1}{4}$	36	60		
			24.40	8	NW $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
		1872-78	5.40	8	SE $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
			19.50	8	SW $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
			19.80	8	NE $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
			23.60*	8	SW $\frac{1}{4}$ NW $\frac{1}{4}$	36	60		
Total.....			118.80						

*Cleared pasture land.

Claimant—W. J. Black, Deeth, Nevada.

Source—Brennen Gulch.

Ditches Nos. 16 and 17.....	1872	1878	5.90	8	NE $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
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Claimant—W. J. Black, Deeth, Nevada.

Source—Harder Creek.

Ditch No. 15.....	1872	1875-76	1.90	8	NE $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
Eddy Ditch No. 8.....	1872		2.00	8	NE $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
			9.90	8	NW $\frac{1}{4}$ NE $\frac{1}{4}$	36	60		
Total.....			13.90						

Claimant—George Byers, Deeth, Nevada.

Source—Springs and Spring Branch.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Byers Ditch No. 2*.....	1883	1883	8.50	27	SW1SE1	37	60		
Byers Ditch No. 3*.....	1891	1891	12.30	27	SW1SE1	37	60		
			4.30	27	SE1SW1	37	60		

Total..... 25.10

*In proofs heretofore submitted claimant referred to the natural water source as "waste water" when it should have been stated and described as hereinabove stated and set forth. (From proof.)

Claimant—George Byers, Deeth, Nevada.

Source—Spring Branch and Hall Canyon Creek.

Byers Ditches Nos. 9 and 10.....	1883	1883	6.80	22	NE1NW1	37	60		
			8.00	22	NW1NW1	37	60		

Total..... 14.80

Claimant—George Byers, Deeth, Nevada.

Source—Hall Canyon Creek and Swamp.

Hanks Ditch and Byers Ditch No. 1.....	1883-1896	1883	15.00	27	SE1SE1	37	60		
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Claimant—George Byers, Deeth, Nevada.

Source—Hall Canyon Creek and Springs.

Hanks Ditch and Byers Ditch No. 12.....	1880	1881	22.00	27	NE1SE1	37	60		
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Claimant—George Byers, Deeth, Nevada.

Source—Hall Canyon Creek.

Hanks Ditch.....	1880	1881	15.10	27	NE1SE1	37	60		
			28.90	27	NW1SE1	37	60		
			12.00	27	SW1SE1	37	60		
			7.30	27	SE1SE1	37	60		
Byers Ditch No. 5, being an extension of Hanks Ditch.*	1900	1900	5.50	27	SW1NW1	37	60		
			1.20	27	SE1NW1	37	60		
			10.00	27	NE1SW1	37	60		

Total..... 80.00

*In proof heretofore submitted claimant referred to the natural source as "waste water," when it should have been stated and described as hereinabove set forth. (From proof.)

Claimant—George Byers, Deeth, Nevada.

Source—Herder Creek.

McMullin Ditch and Byers Main Ditch*.....	Prior to 1892	1892	37.70	4	NE1	36	60		
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*Appropriated waters were used through the McMullin Ditch from 1892 until 1910. When application No. 1439 was made for waters for additional lands to be irrigated, then a new ditch was constructed known as the Byers Main Ditch, herein mentioned, and the waters formerly conducted through the McMullin Ditch were used through this new ditch (Byers Main Ditch), together with the waters under application No. 1439, and have ever since used this new ditch for both. (From proof.)

Claimant—George Byers, Deeth, Nevada.

Source—Blasengame Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Byers Ditch No. 4.....	1881	1881	15.30	27	NE1SW1	37	60		
			6.00	27	NW1SW1	37	60		
			4.00	27	SW1NW1	37	60		
Byers Ditches Nos. 6, 7, and 8.....	1883	1883	15.90	22	SW1NW1	37	60		
			21.10	22	NW1NW1	37	60		
			13.60	22	NW1SW1	37	60		
			1.70	22	SW1SW1	37	60		
Total.....			77.60						

Claimant—S. M. Davis, Deeth, Nevada.

Source—Ackler Creek.

Ditch No. 1.....	1888	1888	12.00	10	NW1NW1	36	60		
			8.00	10	NW1NW1	36	60		
			.50	10	SE1NW1	36	60		
		1896	10.80	9	NE1NE1	36	60		
			1.00*	9	NE1NE1	36	60		
Ditch No. 2.....	1889	1880	11.80	10	NW1NW1	36	60		
			3.30	10	NE1NW1	36	60		
		1891	.80	10	NE1NW1	36	60		
			6.00	10	SE1NW1	36	60		
Ditch No. 3.....	1892	1904	2.00	10	NE1NW1	36	60		
		1896	15.70	10	SW1NW1	36	60		
			11.50*	10	SE1NW1	36	60		
			6.30†	10	SW1NW1	36	60		
Co-Op Ditch.....	Not	1873	12.20†	10	NW1NW1	36	60		
Riddle Ditch.....	Given		2.38†	9	NE1NW1	36	60		
			1.00	9	NE1NE1	36	60		
Total.....			100.28						

*Partly cleared pasture.

†Uncleared pasture.

‡Land irrigated prior to the Co-Op Ditch through other sources.

OFFICE NOTE: The above is the complete claims as taken from amended proofs and from original proofs shown in Abstract of Claims compiled March 1916, page 191.

Claimant—Thomas J. Earles, Deeth, Nevada.

Source—Right Boulder Creek.

Ditch No. 1.....	1876	1876	18.59	30	SW1	36	60		
			14.03*	30	SW1	36	60		
			7.83†	31	NW1	36	60		
Ditch No. 2 or Stevens Ditch.....	1868	1869	6.24	30	SW1	36	60		
			8.00*	30	SW1	36	60		
Monk's Ditch.....	1868	1868	10.99*	30	SW1	36	60		
			2.60*	30	SW1	36	60		
Total.....			68.38						

*Uncleared brush and rock pasture.

†Partly cleared pasture.

No point of diversion and no right claimed in ditch, except water sometimes overflows ditch and covers pasture.

Claimant—Thomas J. Earles, Deeth, Nevada.

Source—Left Boulder Creek.

Ditch No. 4.....	1878	1878	1.17*	30	SW1	36	60		
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*Level uncleared brush and willow pasture.

Claimant—William Goodale, Deeth, Nevada.

Source—Brennen's Gulch.

Riddell's Ditch No. 1.....	1877	1877	19.80	5	SE1SE1	36	60		
Ditch No. 2.....	1877	1877	9.70	5	SW1SE1	36	60		
		Prior to 1894	10.00	5	SW1SE1	36	60		
Ditch No. 3.....	1877	1877	9.80	5	SE1SE1	36	60		
		Prior to 1894	10.00	5	SE1SE1	36	60		
Ditch No. 4.....	1877	Prior to 1894	19.70	5	SW1SE1	36	60		
Total.....			79.00						

Claimant—Isaac Griswold, Deeth, Nevada.

Source—Boulder Creek.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Vogle Ditch.....	1888	1888	19.70†	12	SE1NW1	36	59		
			2.50	12	NE1SW1	36	59		
			10.30†	12	NE1SW1	36	59		
			.90†	12	NWSW1	36	59		
Robinson Ditch.....	1878	1878	8.90	13	NW1NW1	36	59		
		1888	13.00	12	NW1SW1	36	59		
		1904	26.10	12	NW1SW1	36	59		
Forrester Ditch*.....	1877	1877	26.00	13	NE1SW1	36	59		
			16.60	13	SE1NW1	36	59		
			12.80†	12	SE1NW1	36	59		
			17.90	12	SE1SW1	36	59		
			2.60	13	NE1NW1	36	59		
			2.00†	13	NE1NW1	36	59		
Slough Ditch*.....	1880	1880	9.20	13	SE1SW1	36	59		
			23.70	13	SE1SW1	36	59		
			4.00	13	NE1SW1	36	59		
Total			196.20						

*Date ditch first taken out agreeable, question of abandonment.

†Level meadow used for pasture, cleared pasture (not cleared pasture but meadow land).

‡Level meadow used for pasture, cleared pasture.

Claimant—Isaac Griswold, Deeth, Nevada.

Source—Branch of Boulder Creek.

McMullen Ditch No. 1.....	1876	1875	26.00	13	SW1SW1	36	59		
		1909-10	14.00	13	SW1SW1	36	59		
		1876	19.20	14	SE1SE1	36	59		
			14.00	14	NE1SE1	36	59		
		1889	34.50	14	SE1NE1	36	59		
			28.30	14	NE1NE1	36	59		
Griswold Ditch No. 2.....	1880	1890	40.00	13	NW1SW1	36	59		
			16.60	13	SW1NW1	36	59		
Total			192.60						

OFFICE NOTE: The above is taken from amended proofs filed in the office of State Engineer. For complete proof reference is made to original proofs, compiled on pages 194-195 of Abstract of Claims compiled March, 1916.

Claimant—George A. Grock, Deeth, Nevada.

Source—Starr Creek.

Grock Ditch No. 2.....	1871	1871	19.10	36	NW1SW1	37	59		
			7.80	36	SW1NW1	37	59		
			17.90	36	SW1NW1	37	59		
			3.80	36	NW1SW1	37	59		
Total			48.10						

OFFICE NOTE: The above is taken from amended proofs; reference is made for complete filings to original proofs as compiled on page 194 of Abstract of Claims compiled March, 1916.

Claimant—L. D. Hylton and H. C. Mentz, Elko, Nevada.

(Formerly John Crosson.)

Source—Herder Creek, thence through Brennen's Gulch.

Crosson Ditch No. 1.....	1876	1875	10.00	5	SE1SW1	36	60		
		1876	27.60	5	SE1SW1	36	60		
		1877	19.50	5	NE1SW1	36	60		
		1876							
		and prior to							
		1881	19.50	5	NE1SW1	36	60		
Henry Ditch No. 2*.....	1871	1871	185.00*						
Crosson Ditch (out of Herder Creek through Brennen's Gulch).....	1873	about 1873	10.00	5	SW1SW1	36	60		

*The ditches referred to all divert from the same creek (Herder Creek). In the year 1871 about 70 acres were irrigated, of which 60 were in the N1NE1, Sec. 7. In 1872 about 60 acres additional were irrigated, of which about 40 acres were in N1NW1, Sec. 8. In 1873 about 17 additional were irrigated, of which about 10 acres were in SW1SW1, Sec. 5. In 1875 about 20 acres additional were irrigated, and between 1875 and 1880 all the remainder of said subdivisions, as shown by the cultural map. Claimant uses water from both Herder Creek and Ackler Creek. In many cases it is difficult to segregate the lands that are irrigated from each creek alone.

Claimant—L. D. Hylton and H. C. Ments, Elko, Nevada:
(Formerly John Crosson.)

Source—Herder Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Brennen Ditch.....	Prior to 1872	1874	60.00*	7	N½NE¼	36	60		
Henry Ditch No. 4.....	1872	1872	5.00	7	SE½NE¼	36	60		
			5.90*	7	NE½NE¼	36	60		
			11.20†	7	SE½NE¼	36	60		
Ditch No. 7.....	1870	1870	10.60	8	NE½NW¼	36	60		
			7.80*	8	NW½NW¼	36	60		
Ditch No. 12.....	1870	1870 to 1880	5.00‡	7	NE½NE¼	36	60		
			6.00	7	NE½NE¼	36	60		
Total.....			114.50						
*Partly cleared pasture.			†Pasture.		‡Cleared pasture.				

Claimant—L. D. Hylton and H. C. Ments, Elko, Nevada.
(Formerly John Crosson.)

Source—Ackler Creek.

Crosson Ditch No. 3 and several small ditches.....	1872	1873	Abt. 36.00	8	NE½NW¼	36	60		
Henry Ditch No. 5.....	1873	1873	21.50	7	SE½NE¼	36	60		
Ditch No. 8.....	1873	1873	4.40	8	NE½NW¼	36	60		
			7.80*	8	NW½NW¼	36	60		
			6.20	8	NW½NW¼	36	60		
Ditch No. 9.....	1873	1873	10.60	8	NE½NW¼	36	60		
			7.80†	8	NW½NW¼	36	60		
Ditches Nos. 10 and 11.....	1873	1873	16.60	7	SW½NE¼	36	60		
Total.....			110.90						
*Cleared pasture.			†Partly cleared pasture.						

Claimant—L. D. Hylton and H. C. Ments, Elko, Nevada.
(Formerly John Crosson.)

Source—Brennen Gulch.

Henry Ditch No. 2.....	1874	1874	11.70	5	SW½SW¼	36	60		
		1882	7.00	6	NE½SE¼	36	60		
		1877-1893	30.00	6	NE½SE¼	36	60		
			21.80	6	SE½SE¼	36	60		
			9.70	6	SW½SE¼	36	60		
		1894	14.70	6	NW½SE¼	36	60		
		1897	37.00	5	NW½SW¼	36	60		
			3.50	6	NW½SE¼	36	60		
		1886	2.90	6	SE½SE¼	36	60		
			1.20	6	SW½SE¼	36	60		
		1909	15.00	6	NW½SE¼	36	60		
			1.00	6	SW½SE¼	36	60		
			5.60	6	NE½SW¼	36	60		
Ditch No. 3.....	1873	1873	10.60	8	NE½NW¼	36	60		
			7.60*	8	NW½NW¼	36	60		
Ditch No. 4.....	1873	1873	9.30	5	SW½SW¼	36	60		
			9.30†	5	SW½SW¼	36	60		
			11.80‡	6	SE½SE¼	36	60		
Ditch No. 5.....	1871	1871	9.70	7	NE½NE¼	36	60		
Ditch No. 6.....	1870	1870-74	10.40	7	NE½NE¼	36	60		
			29.50	7	NW½NE¼	36	60		
			22.20	7	SW½NE¼	36	60		
Total.....			281.00						
*Partly cleared pasture.			†Pasture.		‡Brush pasture.				

**Claimant—Joseph W. Johnston, Deeth, Nevada. (Formerly
Mrs. H. P. Johnston.)**

Source—Boulder Creek.

Johnston and Armstrong Ditch.....	1868	1868	20.00	19	SW¼	36	60		
		1871	20.00	19	SW¼	36	60		
		1872	10.15	19	SW¼	36	60		
		1873	10.00	19	SW¼	36	60		

JOSEPH W. JOHNSTON—Continued.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Johnson and Armstrong Ditch.....		1875	5.00	19	SW $\frac{1}{4}$	36		60	
		1868	103.63*	24	SE $\frac{1}{4}$	36		60	
				25	NE $\frac{1}{4}$	36		60	
Total.....			108.78						

*Partly cleared pasture.

(Reference is made to original claims on page 198 of Abstract of Claims compiled March, 1916.)

FROM PROOF: The 103.63 acres is irrigated partly from the Johnston and partly from the Johnson-Armstrong Ditch. About two-thirds of the land is served by the former ditch and one-third by the latter.

Claimant—H. M. Lane, Deeth, Nevada.

Source—Boulder Creek.

Carlson Ditch, thence through	1878	1878	43.00	19	NW $\frac{1}{4}$	36		60	
Johnston and Lane Ditch.		1888	17.00	19	NW $\frac{1}{4}$	36		60	
Johnson and Armstrong Ditch.....	1868	1876	20.00	19	NW $\frac{1}{4}$	36		60	
Total.....			80.00						

Claimant—Mrs. Anna McMullen, Deeth, Nevada.

Source—Boulder Creek.

Scott and Monks Ditch No. 1, or McMullen Ditch.	1868	1868	40.00	24	N $\frac{1}{2}$ SW $\frac{1}{4}$	36		59	
		1870	60.00	24	SE $\frac{1}{4}$ NW $\frac{1}{4}$	36		59	
		1871	40.00	24	E $\frac{1}{2}$ W $\frac{1}{4}$	36		59	
Scott and Monks Ditch No. 2.....	1868	1868	40.00	24	NW $\frac{1}{4}$ NW $\frac{1}{4}$	36		59	
	1869-1888	1888	38.78	24	NW $\frac{1}{4}$ SW $\frac{1}{4}$	36		59	
				24	NE $\frac{1}{4}$ NW $\frac{1}{4}$	36		59	
					SW $\frac{1}{4}$	36		59	

FROM PROOF: Above lands also irrigated by other streams. Cultural map shows the irrigation and ditches.

Scott and Monks Ditch No. 3.....	1882	1882-1887	120.00	23	NE $\frac{1}{4}$ SE $\frac{1}{4}$	36		59	
		1868-1887	40.65	23	E $\frac{1}{2}$ NE $\frac{1}{4}$	36		59	
Monks Ditch.....	Prior to April 20	1874	40.00	25	SW $\frac{1}{4}$ SW $\frac{1}{4}$	36		59	
			51.55*	25	S $\frac{1}{2}$ NW $\frac{1}{4}$				
			111.15*	26	NE $\frac{1}{4}$				
			80.00†	22	W $\frac{1}{2}$ SE $\frac{1}{4}$				
			80.00	22	E $\frac{1}{2}$ NW $\frac{1}{4}$				
			28.45†	25	S $\frac{1}{2}$ NW $\frac{1}{4}$				
	1883-1902		262.88	27	N $\frac{1}{2}$ NE $\frac{1}{4}$				
				22	NW $\frac{1}{4}$ NW $\frac{1}{4}$				
				15	S $\frac{1}{2}$ SE $\frac{1}{4}$				
				15	E $\frac{1}{2}$ SW $\frac{1}{4}$				
				15	W $\frac{1}{2}$ NW $\frac{1}{4}$				
				9	SE $\frac{1}{4}$ NW $\frac{1}{4}$				
				9	N $\frac{1}{2}$ SE $\frac{1}{4}$				
				9	SE $\frac{1}{4}$ SE $\frac{1}{4}$				
McCoy Ditch (being ditches Nos. 6, 8, and 9).....	1887	1868	40.00	24	SW $\frac{1}{2}$ SE $\frac{1}{4}$	36		59	
St. Clair-Boulder Creek Ditch (Gris-vold Ditch).	1888	1888	39.40	25	N $\frac{1}{2}$ NW $\frac{1}{4}$				

*Meadow land. †Pasture land.

FROM PROOF: "Majority of this land irrigated from several different ditches and was all irrigated at an early date as pasture land. Portions have been cleared and used as meadow and afterwards reverted to pasture lands.

"Also portions cleared as meadow that had been irrigated previously as pasture. The dates range from 1868 to as late as 1902. Water, however, was used on majority of land as pasture land since the year 1883."

Claimant—Mrs. Anna McMullen, Deeth, Nevada.

Source—Stevens Creek.

Ditches Nos. 1, 2, 3, 10, 11, 12, and 20.	1883	1883-1902	38.70	27	N $\frac{1}{2}$ NE $\frac{1}{4}$	36		59	
			646.10	22		36		59	
				15	S $\frac{1}{2}$ SE $\frac{1}{4}$	36		59	
				15	SW $\frac{1}{4}$	36		59	
				15	W $\frac{1}{2}$ NW $\frac{1}{4}$	36		59	
				16	E $\frac{1}{2}$ E $\frac{1}{4}$	36		59	
				16	NW $\frac{1}{2}$ NE $\frac{1}{4}$	36		59	
				9		36		59	

FROM PROOF: Land irrigated as early as 1883 as pasture, and has been irrigated continuously since as pasture. Some of land mowed as meadow prior to 1904.

MRS. ANNA McMULLEN—Continued.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Bop Ditch or Boss Ditch.....	Prior to 1883	1883	40.00	26	SE $\frac{1}{4}$ NW $\frac{1}{4}$	36		59	
		1883-1902	78.70	26	N $\frac{1}{4}$ NW $\frac{1}{4}$	36		59	
			41.30*	26	SW $\frac{1}{4}$ NW $\frac{1}{4}$	36		59	
Extension of Eagle Ditch (Ditches Nos. 12 and 13).	Prior to 1883	1883	18.00	26	SW $\frac{1}{4}$ SE $\frac{1}{4}$	36		59	
			6.90	26	NW $\frac{1}{4}$ SE $\frac{1}{4}$	36		59	
			6.40	26	SE $\frac{1}{4}$ SW $\frac{1}{4}$	36		59	

*Irrigated pasture.

From Proof: Remainder of 160 acres as shown on cultural map, in sagebrush and willow pasture.

**Claimant—William C. Mills, Deeth, Nevada. (Formerly
C. F. Stone.)**

Source—Deering Creek.

Stone Ditch No. 1.....	1873	1873	31.00	28	SW $\frac{1}{4}$ NE $\frac{1}{4}$	36		60	
		1876	36.00	28	NE $\frac{1}{4}$ SE $\frac{1}{4}$	36		60	
		Prior to 1883	18.00	28	SE $\frac{1}{4}$ SE $\frac{1}{4}$	36		60	
Total.....			82.00						

Branch of Deering Creek

Stone Ditch No. 2.....	1906	1906	3.00	28	SE $\frac{1}{4}$ SE $\frac{1}{4}$	36		60	
Stone Ditch No. 3.....	1883	1884	35.00	28	NE $\frac{1}{4}$ SE $\frac{1}{4}$	36		60	
			8.20	28	SE $\frac{1}{4}$ SE $\frac{1}{4}$	36		60	
Total.....			46.20						

Claimant—E. C. Murphy, Deeth, Nevada.

Source—Boulder Creek.

Stevens Ditch.....	1869	1869	40.00	25	SW $\frac{1}{4}$ SW $\frac{1}{4}$	36		59	
		1870	26.80	25	SE $\frac{1}{4}$ SE $\frac{1}{4}$	36		59	
		1880	40.00	25	NW $\frac{1}{4}$ SW $\frac{1}{4}$	36		59	
		1889	23.70	25	NE $\frac{1}{4}$ SW $\frac{1}{4}$	36		59	
		1900	16.00	25	NE $\frac{1}{4}$ SW $\frac{1}{4}$	36		59	
		1873	1.60	36	NW $\frac{1}{4}$ NW $\frac{1}{4}$	36		59	
		1868	40.00	26	NE $\frac{1}{4}$ SE $\frac{1}{4}$	36		59	
			15.00	26	SE $\frac{1}{4}$ SE $\frac{1}{4}$	36		59	
Total.....			202.60						

Irrigated from Stevens Creek, not from Stevens Ditch, also Boulder Creek.

OFFICE NOTE: The above is taken from amended proofs. For complete claims reference is made to original proofs, pages 200, 201, 202, and 203 of Abstract Claims, March, 1916.

Claimant—L. L. Redden, Deeth, Nevada.

Source—Herder Creek.

Redden's Ditch.....	1894	1894	13.50	5	SE $\frac{1}{4}$ NE $\frac{1}{4}$	36		60	
		1895	15.70	5	SW $\frac{1}{4}$ NE $\frac{1}{4}$	36		60	
		1900	28.80	5	SE $\frac{1}{4}$ NW $\frac{1}{4}$	36		60	
			81.40	5	SW $\frac{1}{4}$ NW $\frac{1}{4}$	36		60	
			2.50*	5	SE $\frac{1}{4}$ NE $\frac{1}{4}$	36		60	
			3.20†	5	SW $\frac{1}{4}$ NE $\frac{1}{4}$	36		60	
Total.....			94.60						

*Cleared pasture.

†Sagebrush and grass pasture.

Claimant—L. L. Redden, Deeth, Nevada.

Source—Starr Creek.

Weathers and Redden Ditch.....	1879	1879	34.00	34	NE $\frac{1}{4}$ SE $\frac{1}{4}$	37		59	
			39.00	34	NW $\frac{1}{4}$ SE $\frac{1}{4}$	37		59	
			17.70	34	NE $\frac{1}{4}$ SW $\frac{1}{4}$	37		59	
			12.00	34	SW $\frac{1}{4}$ SW $\frac{1}{4}$	37		59	
Total.....			102.70						

OFFICE NOTE: The above claims are taken from amended proofs; for complete claims reference is made to original proofs on pages 204 and 254 of Abstract of Claims compiled March, 1916.

Claimant—E. C. Riddell, Deeth, Nevada.

Source—Herder Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
McMullen Ditches Nos. 1, 2, 4.....	1870	1870	3.30	9	NE1NE1	36		60	
			18.10	9	NW1NE1	36		60	
		1875	16.20	9	NE1NW1	36		60	
		1876	11.60	9	NW1NW1	36		60	
			7.90*	9	NE1NE1	36		60	
Total.....			57.10						

*Uncleared willow pasture.

Claimant—E. C. Riddell, Deeth, Nevada.

Source—Ackler Creek.

McMullen Ditches Nos. 5, 6, 7, 8.....	1870	1870-76	2.00	9	NE1NE1	36		60	
			.60	9	NW1NE1	36		60	
			6.90	9	NE1NW1	36		60	
			13.50	9	NW1NW1	36		60	
			2.00	9	SW1NW1	36		60	
			3.70	9	NW1NW1	36		60	
		1873	3.20	9	NW1NE1	36		60	
			6.60*	9	NW1NE1	36		60	
			11.20*	9	NE1NW1	36		60	
McMullen Ditch No. 3.....	1873	1873	5.00*	9	SW1NW1	36		60	
			15.30	9	SE1NW1	36		60	
			15.00	9	SW1NW1	36		60	
			3.00	9	SE1NW1	36		60	
			1.50	9	NW1NE1	36		60	
			2.10	9	SW1NE1	36		60	
			5.70	9	NE1NW1	36		60	
		1874	10.00	9	NW1NE1	36		60	
			3.80	9	NE1NE1	36		60	
		1901	2.00	9	SE1NW1	36		60	
			.70	9	SW1NE1	36		60	
		1904	1.00	9	NW1SW1	36		60	
			1.50	9	SE1NW1	36		60	
			5.80	9	SW1NW1	36		60	
Total.....			133.30						

*Uncleared willow pasture.

Claimant—James Riddell, Deeth, Nevada.

Source—Herder Creek.

Brennan's Gulch, thence through	1876	1895	25.00	5	NW1SE1	36		60	
Crosson Ditch No. 1.			5.00	5	NE1SE1	36		60	
Brennan's Gulch thence through	1894	1894	14.50	5	NW1SE1	36		60	
Black Ditch.		1895	20.50	5	NE1SE1	36		60	
			7.00*	4	SW1SW1	36		60	
McMullen Ditch.....	1875	1875	15.00	4	SE1SW1	36		60	
		1892	18.70	4	SE1SW1	36		60	
		1893	10.00	4	SW1SW1	36		60	
		1894	10.00	4	SW1SW1	36		60	
		1872	4.90	4	SW1SW1	36		60	
		1896	10.00	5	NE1SE1	36		60	
		1910	2.00	5	NE1SE1	36		60	
Ditch No. 1.....	1395	1910	3.50†	5	NE1SE1	36		60	
Total.....			146.10						

*Cleared pasture.

†Land was first irrigated and cultivated in 1870 with water from an old ditch which is now abandoned, the present McMullen ditch having taken its place.

Ditch No. 1 was constructed to irrigate this land.

Ten acres in addition were in cultivation prior to the year 1872, but am not able to segregate the exact land.

Claimant—John M. Riddell, Deeth, Nevada.

Source—Herder Creek.

James McMullen Ditch No. 1.....	1880	1880	11.50	4	NW1SE1	36		60	
		1893	10.00	4	SE1	36		60	
		1901	1.00	4	NW1SE1	36		60	
		1880	10.50	4	NE1SE1	36		60	
		1893	23.80	4	NE1SE1	36		60	
		1900	1.00	4	NE1SE1	36		60	
		1901	1.00	4	NE1SE1	36		60	

JOHN M. RIDDELL—Continued.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
James McMullen Ditch No. 1.....		1902	5.00	3	NW½SW¼	36			60
		1903	5.00	3	NW½SW¼	36			60
		1904	5.30	3	NW½SW¼	36			60
		1901	5.00*	3	NW½SW¼	36			60
		1901	20.00	3	SW½SW¼	36			60
James McMullen Ditch No. 2.....	1375	1875	6.00	4	NW½SE¼	36			60
			1.00	4	NE½SE¼	36			60
		1893	10.00	4	NW½SE¼	36			60
		1894	1.00	4	NE½SE¼	36			60
James McMullen Ditch No. 3, usually called Riddell Ditch.	1893	1901	1.30	3	SW½SW¼	36			60
		1901	19.70	3	SW½SW¼	36			60

*Pasture.

OFFICE NOTE: The above is taken from the amended proofs. For complete claims reference is made to original proofs as compiled on pages 204, 205 Abstract of Claims compiled in March, 1916.

Claimant—Ed. Smiley, Deeth, Nevada.

Source—Hall Canyon Creek.

Hall Ditch No. 1, Hall Ditch No. 2, Malcolm Hall Ditch and Hall Ditch. (Called on original map Byers and Smiley Ditch.)	(a)	1872	11.80	26	SE½NW¼	37			60
			24.30	26	NE½SW¼	37			60
			4.00	26	SE½SW¼	37			60
			2.00	26	NW½SE¼	37			60
			.50	26	SW½SE¼	37			60
		1893	19.40	26	SE½SE¼	37			60
			2.20	26	SW½SE¼	37			60

FROM PROOF: "The foregoing are in addition to acreages shown in original proof."

OFFICE NOTE: Dates of commencement of construction of the above-named ditches, reference is made to the original proofs, compiled on page 206 of Abstract of Claims, compiled March, 1916.

Claimant—W. J. Smiley, Deeth, Nevada.

Source—Boulder Creek.

Boulder Ditches Nos. 1, 2*	1877	1877	48.40	13	NE¼	36			59
Monks Ditch.....	1877	1877	41.00	23	SE¼	36			59
			23.03	23	SW¼	36			59
			21.44	23	NE¼	36			59
			3.87	23	NW¼	36			59
Total.....			137.74						

FROM PROOF: *Ditches not owned by Mr. Smiley. Ditches property of Mr. Weathers. Mr. Smiley has used water since the date above, 1877.

Claimant—W. J. Smiley, Deeth, Nevada.

Source—Ackler Creek.

Ackler Ditches Nos. 1, 2.....	1870	1871	60.00	7	SW¼	36			60
			1.00	7	NW¼	36			60
Total.....			61.00						

Claimant—W. J. Smiley, Deeth, Nevada.

Source—Deering Creek.

Deering Ditches Nos. 1, 2, 3, 4, 5, and 6.*	1868	1868	10.00	18	NE¼	36			60
		1868	20.00	18	NW¼	36			60
		1869	25.00	18	NE¼	36			60
		1870	25.00	18	NE¼	36			60
		1871	20.00	18	NW¼	36			60
		1872-79	80.00	18	N¼	36			60
		1872	25.00	18	NE¼	36			60
			25.00	18	NW¼	36			60
		1873	25.00	18	NE¼	36			60
			13.00	18	NW¼	36			60
Goodale & Rech Ditch.....	1870	1874	25.00	18	NE¼	36			60
		1877	80.00	7	SW¼	36			60
		1870	8.00	17	NW¼	36			60
		1903	10.20	17	NW¼	36			60
Total.....			391.20						

FROM PROOF: *Ditches property of Mrs. McMullen.

Claimant—W. J. Smiley, Deeth, Nevada.

Source—Herder Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Herder Ditches Nos. 1, 2.....	1872	1872	20.00	7	NW½	36		60	
		1873	20.00	7	NW½	36		60	
		1874	40.00	7	NW½	36		60	
		1900	26.57	7	NW½	36		60	
		1907	9.00	7	NW½	36		60	
		1902	17.00	7	NW½	36		60	
Total.....			132.57						

OFFICE NOTE: For complete claims reference is made to original proofs compiled on pages 266, 207 of Abstract of Claims compiled March, 1916.

Claimant—Frank, John and Wilbur Smiley, Deeth, Nevada.

Source—Smiley Creek.

Ditch No. 4.....	1894	1894	1.40*	2	SW¼NW¼	36		60	
		1894	1.00*	2	SE¼NW¼	36		60	
		1894	2.80*	2	NW¼NW¼	36		60	
		1894	7.50*	2	NE¼NW¼	36		60	
Ditch No. 5.....	1894	1894	.50	2	SW¼NW¼	36		60	
		1894	13.60	2	NW¼NW¼	36		60	
		1895	5.00	2	NW¼NW¼	36		60	
		1895	3.60	35	SW¼SW¼	37		60	
		1896	1.40†	35	SW¼SW¼	37		60	
		1896	.75	35	SE¼SW¼	37		60	
Total.....			37.55						

*Orchard and garden. †Orchard.

Claimant—Frank, John and Wilbur Smiley, Deeth, Nevada.

Source—Dry Gulch.

Ditch No. 8.....	1892	1896	.50*	2	NE¼NW¼	36		60	
		1896	.75*	35	SE¼SW¼	37		60	
		1892	2.00	35	SW¼SW¼	37		60	
		1892	1.00	35	NW¼SW¼	37		60	
Total.....			4.25						

*Orchard.

Claimant—Frank, John and Wilbur Smiley, Deeth, Nevada.

Source—Halls Canyon Creek.

Ditch No. 7.....	1897	1897	3.70	35	NE¼SW¼	37		60	
		1897	6.00	35	NW¼SW¼	37		60	
		1897	2.50	35	SE¼NW¼	37		60	
		1897	5.50	35	SW¼NW¼	37		60	
Ditch No. 6.....	1880	1880-82	14.70	35	SW¼NW¼	37		60	
			33.70	35	NW¼NW¼	37		60	
			3.00	35	NW¼NW¼	37		60	
			3.00	34	NE¼NE¼	37		60	
Total.....			72.10						

Claimant—Frank, John and Wilbur Smiley, Deeth, Nevada.

Source—Herder Creek.

Smiley Ditch No. 3.....	1879	1880	40.00	34	NW¼SE¼	37		60	
		1880	37.00	34	SW¼NE¼	37		60	
		1880	40.00	34	SE¼SE¼	37		60	
		1880	37.00	34	NE¼NE¼	37		60	
		1880	13.10	34	NW¼NE¼	37		60	
		1880	12.00	35	SW¼NW¼	37		60	
		1881	40.00	34	NE¼SE¼	37		60	
		1881	15.00	34	SE¼SE¼	37		60	
		1882	34.80	34	SW¼SE¼	37		60	
		1882	36.50	34	NE¼SW¼	37		60	
		1882	4.00	3	NE¼NW¼	36		60	
		1882	.40	34	NW¼SW¼	37		60	
		1883	38.40	34	SE¼SW¼	37		60	
		1883	8.60	34	SW¼SW¼	37		60	
		1885	2.30	34	SE¼NW¼	37		60	
		1891	6.20	34	SE¼SE¼	37		60	
		1891	1.70	3	NE¼NE¼	36		60	
		1892	24.40	35	SW¼SW¼	37		60	

FRANK, JOHN AND WILBUR SMILEY—Continued.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Smiley Ditch No. 3.....		1896	8.30	34	SE1SE1	37		60	
		1896	1.90	3	NE1NE1	36		60	
		1896	5.00	2	NW1NW1	36		60	
		1897	30.40	35	NW1SW1	37		60	
		1897	3.00	35	NE1SW1	37		60	
		1907-10	.40	3	SW1NE1	36		60	
		1907	.80	3	SE1NE1	36		60	
		1907	10.60	3	NW1NE1	36		60	
		1907	18.40	3	NE1NE1	36		60	
		1907	2.40	34	SW1SE1	37		60	
			5.10	34	SE1SE1	37		60	
Total.....			472.70						

Claimant—**A. L. Stillwell, Wells, Nevada. (Formerly Enoch Gray.)**

Source—**Halls Canyon.**

Hall Canyon Creek and Berger Creek below their confluence.	(*)	Prior to 1888	6.90	24	NW1NW1	37		60	
			4.40	24	NE1NW1	37		60	
			22.20	24	SW1NW1	37		60	
			7.00	24	SE1NW1	37		60	
			22.60	24	SE1SW1	37		60	
			1.70	24	NW1SW1	37		60	
			26.50	25	NE1NW1	37		60	
			3.70	25	SE1NW1	37		60	
Total.....			95.00						

OFFICE NOTE: *For dates of commencement of construction of the above-mentioned ditches reference is made to original proofs as compiled on page 193 of Abstract of Claims, compiled March, 1916; also reference is made to original proof on said page 193 for complete claims.

Claimant—**W. B. Tarvelle, Deeth, Nevada.**

Source—**Left Boulder Creek.**

Tarvelle's Boulder Ditch, thence through Tarvelle's Ditches Nos. 1 and 2.	Since 1905	1881	46.41	30	SE1	36		60	
Tarvelle's Boulder Ditch.....	1884	1884	6.50	30	SE1	36		60	
			18.00*	30	SE1	36		60	
Tarvelle's Boulder Ditch, thence through Tarvelle's Ditch No. 3.	1891	1891	11.40†	30	SE1	36		60	
			35.45*	30	SE1	36		60	

*Sagebrush pasture.

†Cleared pasture land.

Claimant—**Union Land and Cattle Co., Deeth Nevada.**

(Formerly Halleck Cattle Company.)

Source—**Secret Creek and Heelfly Creek, a Tributary.**

For dates of construction and irrigation, see pages 195-197, Abstract of Claims, March, 1916.

9.20†	33	NE1NE1	35	59
26.55†	33	SE1NE1	35	59
6.70†	33	NE1SE1	35	59
19.89†	34	NW1SW1	35	59
14.82†	34	SW1SW1	35	59
4.44*	34	SW1SW1	35	59
4.70*	34	SE1SW1	35	59
8.20†	34	SE1SW1	35	59
.30†	3	NW1NW1	34	59
12.61†	3	NE1NW1	34	59
18.70*	3	NE1NW1	34	59
2.74	3	NE1NW1	34	59
5.05*	3	SE1NW1	34	59
4.35†	3	SE1NW1	34	59
.55†	3	NW1NE1	34	59
.10*	3	NW1NE1	34	59
1.55*	3	SW1NE1	34	59
4.45	3	SW1NE1	34	59
12.75†	3	SW1NE1	34	59
.35*	3	SE1NE1	34	59
.40*	3	NW1SE1	34	59
3.40†	3	NW1SE1	34	59
1.45*	3	NE1SE1	34	59
8.40†	3	NE1SE1	34	59
4.45	2	NW1SW1	34	59
1.55	2	NE1SW1	34	59
34.20†	20	NW1NW1	35	59

UNION LAND AND CATTLE CO.—Continued.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
For dates of construction and irrigation, see pages 196-197, Abstract of Claims, March, 1916.									
	31.10†	20	SW¼NW¼	35	59				
	33.14†	20	NE¼NW¼	35	59				
	1.00*	20	NE¼NW¼	35	59				
	1.05	20	NE¼NW¼	35	59				
	32.65†	20	SE¼NW¼	35	59				
	21.75†	20	NW¼NE¼	35	59				
	5.20	20	NW¼NE¼	35	59				
	13.05*	20	NW¼NE¼	35	59				
	14.90†	20	SW¼NE¼	35	59				
	9.90	20	NE¼NE¼	35	59				
	30.10*	20	NE¼NE¼	35	59				
	5.98*	20	SE¼NE¼	35	59				
	38.40*	21	NW¼NW¼	35	59				
	19.80*	21	SW¼NW¼	35	59				
	29.70*	21	NE¼NW¼	35	59				
	1.55†	21	NE¼NW¼	35	59				
	38.70*	21	SE¼NW¼	35	59				
	16.95*	21	NW¼NE¼	35	59				
	2.25	21	NW¼NE¼	35	59				
	1.50†	21	NW¼NE¼	35	59				
	33.40*	21	SW¼NE¼	35	59				
	6.90	21	SW¼NE¼	35	59				
	8.85*	21	NE¼NE¼	35	59				
	32.25*	21	SE¼NE¼	35	59				
	7.15	21	SE¼NE¼	35	59				
	8.80*	21	NE¼SW¼	35	59				
	2.50†	21	NE¼SW¼	35	59				
	2.87†	21	SE¼SW¼	35	59				
	1.77†	21	NW¼SE¼	35	59				
	38.00*	21	NW¼SE¼	35	59				
	17.15*	21	SW¼SE¼	35	59				
	1.75	21	SW¼SE¼	35	59				
	1.35	21	SW¼SE¼	35	59				
	12.63†	21	SW¼SE¼	35	59				
	5.60	21	SE¼SE¼	35	59				
	26.70*	21	SE¼SE¼	35	59				
	.80*	22	NW¼NW¼	35	59				
	6.75	22	SW¼NW¼	35	59				
	6.67	22	NW¼SW¼	35	59				
	6.90	22	NW¼SW¼	35	59				
	1.60†	22	SW¼SW¼	35	59				
	2.25*	22	SW¼SW¼	35	59				
	17.15†	28	NW¼NE¼	35	59				
	12.85†	28	NW¼NE¼	35	59				
	2.10†	28	NW¼NE¼	35	59				
	3.15†	28	SW¼NE¼	35	59				
	17.07†	28	SW¼NE¼	35	59				
	1.60	28	SW¼NE¼	35	59				
	24.07†	28	NE¼NE¼	35	59				
	2.75†	28	NE¼NE¼	35	59				
	6.05†	28	NE¼NE¼	35	59				
	28.93†	28	SE¼NE¼	35	59				
	8.43†	28	SE¼NE¼	35	59				
	1.60	28	SE¼NE¼	35	59				
	1.20†	28	SE¼NE¼	35	59				
	15.77†	28	NW¼SE¼	35	59				
	4.58	28	NW¼SE¼	35	59				
	15.65†	28	SW¼SE¼	35	59				
	31.57†	28	NE¼SE¼	35	59				
	9.42	28	NE¼SE¼	35	59				
	5.60	28	SE¼SE¼	35	59				
	29.69†	28	SE¼SE¼	35	59				
	4.80†	27	NW¼NW¼	35	59				
	11.58†	27	SW¼NW¼	35	59				
	3.38†	27	SW¼NW¼	35	59				
	1.15†	27	NW¼SW¼	35	59				
	4.60†	27	NW¼NE¼	35	59				
	26.43†	38	NE¼NE¼	35	59				
	18.45*	21	NE¼SE¼	35	59				
	26.55†	21	NE¼SE¼	35	59				
	4.35†	21	SW¼SE¼	35	59				
	2.45	21	SW¼SE¼	35	59				

Total 1,129.11

*Meadow.

†Alfalfa.

‡Pasture.

FROM PROOF: "Segregation of the lands by ditches is impossible owing to the construction thereof allowing the waters of said creeks to commingle and owing to the method of use of waters from the creeks by interrupting the same from time to time as the flow recedes."

Claimant—Union Land and Cattle Co., Deeth, Nevada.

(Formerly Halleck Cattle Company.)

Source—Soldier Creek and Tributaries.

Ditch Title	Date when construction commenced (\$)	Date when land first irrigated (\$)	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
(Tributaries named) Dry Creek,			160.00*	20	NE1	34	59		
Ross Creek, Shortz and Hayes			80.00*	20	SE1	34	59		
Creeks.			90.00*	21	NW1	34	59		
			70.00†	21	NW1	34	59		
			57.10†	21	NE1	34	59		
			47.60*	21	SW1	34	59		
			77.50†	21	SW1	34	59		
			35.00	21	SW1	34	59		
			24.50†	21	SE1	34	59		
			10.40	21	SE1	34	59		
			130.60†	21	SE1	34	59		
			112.00	21	NE1	34	59		
			1.00	21	SE1	34	59		
			144.90†	22	NE1	34	59		
			2.60	22	NE1	34	59		
			12.50†	22	NE1	34	59		
			98.90†	22	NW1	34	59		
			66.10†	22	NW1	34	59		
			160.00	22	SW1	34	59		
			30.60†	22	SE1	34	59		
			87.60†	22	SE1	34	59		
			7.20†	27	NE1	34	59		
			125.00†	27	NW1	34	59		
			17.80†	27	SW1	34	59		
			169.00†	28	NE1	34	59		
			60.00†	28	NW1	34	59		
			120.00†	28	SW1	34	59		
			86.90†	28	SE1	34	59		
			34.80*	8	NE1	34	59		
			106.10†	8	NE1	34	59		
			33.20†	8	NW1	34	59		
			72.60†	8	SW1	34	59		
			72.60†	8	SE1	34	59		
			73.10*	8	SE1	34	59		
			27.30*	9	NW1	34	59		
			17.50*	9	SW1	34	59		
			80.00†	15	SW1	34	59		
			27.70†	16	NE1	34	59		
			1.30*	16	NE1	34	59		
			40.00†	16	NE1	34	59		
			27.40	16	NE1	34	59		
			142.20†	16	NW1	34	59		
			5.50*	16	NW1	34	59		
			138.10†	16	SW1	34	59		
			21.90†	16	SW1	34	59		
			89.00†	16	SE1	34	59		
			15.80*	16	SE1	34	59		
			64.10†	16	SE1	34	59		
			113.70*	17	NE1	34	59		
			47.80†	17	NE1	34	59		
			131.80†	17	NW1	34	59		
			78.10†	17	SW1	34	59		
			21.10*	17	SW1	34	59		
			155.40*	17	SE1	34	59		
			4.60†	17	SE1	34	59		
			13.00*	4	NW1	34	59		
			51.80*	4	SW1	34	59		
			.40*	4	SE1	34	59		
			66.10*	5	NE1	34	59		
			19.60†	5	NE1	34	59		
			11.90†	5	SW1	34	59		
			52.50	5	SE1	34	59		
			3.60*	5	SE1	34	59		
			14.70*	20	NW1	35	59		
			63.80*	20	SW1	35	59		
			19.50†	20	SW1	35	59		
			8.30†	20	SE1	35	59		
			15.50*	20	SE1	35	59		
			9.20†	29	NE1	35	59		
			31.30*	29	NE1	35	59		
			31.00*	29	NW1	35	59		
			1.90†	29	NW1	35	59		
			64.30*	29	SW1	35	59		
			28.80*	29	SE1	35	59		
			1.50†	29	SE1	35	59		
			8.10†	32	NE1	35	59		
			80.20*	32	NE1	35	59		

UNION LAND AND CATTLE Co.—Continued.

<i>Ditch Title</i>	<i>Date when construction commenced</i> (§)	<i>Date when land first irrigated</i> (§)	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N. R. E.</i>
(Tributaries named) Dry Creek,			68.20*	32	NW½	35	59
Ross Creek, Shorts and Hayes			64.10‡	32	NW½	35	59
Creeks.			57.90‡	32	SW½	35	59
			18.40*	32	SW½	35	59
			66.90*	32	SE½	35	59
			2.60‡	32	SE½	35	59
Total.....			4,492.10				

*Meadow. †Alfalfa. ‡Pasture.

§The dates of construction and irrigation are to remain the same as in the original proofs.
(See compilation of original claims on pages 195-197 of the Abstract of Claims to the waters of the Humboldt River and its tributaries, compiled March, 1916.)

FROM PROOF: "Segregation of the lands by ditches is impossible owing to the construction thereof allowing the waters of said creeks to commingle and owing to the method of use of waters from the creeks by interrupting the same from time to time as the flow recedes."

NOTE: The maps prepared by the office of the State Engineer for irrigated lands lying on Secret Creek (two sheets) and the maps prepared by the owner showing the lands irrigated from Soldier Creek, Ross Creek, Shorts Creek, Reed Creek, Jack Creek, Heelfly Creek, Hayes Creek and Dry Creek are referred to and made a part of this proof.

(Claimant—W. W. Weathers, Deeth, Nevada.

Source—Boulder Creek.

Griswold Ditch No. 1.....	1868	1868	36.20	24	NE¼NE¼	36	59
		1868	25.40	24	SE¼NE¼	36	59
			37.50	13	NE¼SE¼	36	59
		1870	39.00	13	SE¼SE¼	36	59
			10.00	13	SW¼SE¼	36	59
			2.80*	24	NE¼NE¼	36	59
			12.80*	24	NW¼SE¼	36	59
		1872	6.10	24	NW¼SE¼	36	59
			12.70	25	NW¼NE¼	36	59
			1.00	13	SE¼SE¼	36	59
			2.70	13	SW¼SE¼	36	59
Johnson & Weathers Ditch.....	1870	1870	14.60	24	SE¼NE¼	36	59
Weathers Ditch No. 1.....	1868	1868	10.00	24	NW¼SE¼	36	59
Weathers Ditch No. 2.....	1869	1869	4.00	24	NW¼SE¼	36	59
Weathers Ditch No. 3.....	1878	1878	28.50	24	SW¼NE¼	36	59
			11.50*	24	SW¼NE¼	36	59
			22.60	24	NW¼NE¼	36	59
			17.40*	24	NW¼NE¼	36	59
			27.30	13	SW¼SE¼	36	59
			38.30	13	NW¼SE¼	36	59
			29.00	13	SW¼NE¼	36	59
			9.50	13	NW¼NE¼	36	59
			1.50	13	SW¼NE¼	36	59

FROM PROOF: "Flood water from Griswold Land."

Griswold Ditch No. 1, thence	1874	1874	14.50	12	SW¼SE¼	36	59
through Weathers Ditch No. 4,		1878	40.00	12	NE¼SE¼	36	59
Griswold Ditch No. 1, thence	1878	1878	16.70	12	NW¼SE¼	36	59
through Weathers Ditch No. 5			40.00	12	SE¼SE¼	36	59
St. Clair Boulder Creek Ditch,	1888	1888	8.60	2	SE¼SE¼	36	59
thence through Weathers Ditch			10.00	2	NE¼SE¼	36	59
No. 6,							
St. Clair Boulder Creek Ditch,	1888	1888	19.30	2	SE¼SE¼	36	59
thence through Weathers			17.30	2	SW¼SE¼	36	59
Ditches Nos. 6, 7, 8,			9.90	2	NW¼SE¼	36	59
St. Clair Boulder Creek Ditch,	1888	1888	14.90*	2	NE¼SE¼	36	59
thence through Weathers			27.20*	2	SE¼NE¼	36	59
Ditches Nos. 7, 8,			20.10	2	SW¼SE¼	36	59
Weathers Ditches Nos. 15, 16.....	1875	1875	15.90	1	SW¼SW¼	36	59
			20.70	1	NW¼SW¼	36	59
			2.00	2	NE¼SE¼	36	59
			22.00	2	NE¼NE¼	36	59
			2.80	2	SE¼NE¼	36	59
O'Brien Boulder Creek Ditch.....	1875	1875	24.20*	12	NW¼NW¼	36	59
			9.70*	12	NE¼NW¼	36	59
			22.00*	1	SW¼SW¼	36	59
Weathers Ditch No. 14.....	1875	1875	8.40	12	NE¼NW¼	36	59
St. Clair Boulder Creek Ditch,	1888	1888	7.60*	12	NW¼NW¼	36	59
thence through Weathers							
Ditch No. 6 to Natural							
Draw.							
Indian Ditch.....	1876	1876	7.60	30	NW¼SW¼	36	59
Total.....			781.80				

*Cleared pasture.

Claimant—W. W. Weathers, Deeth, Nevada.

Source—Starr Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.E.
Weathers Ditches Nos. 11, 12, and 13.	1872	1872	32.90 24.70 12.50*	1	SW1NW1	36	59	
			2.60	1	NE1SW1	36	59	
			2.60	2	NE1NE1	36	59	
Weathers Ditch No. 14.....	1875	1875	21.90*	12	NE1NW1	36	59	
Weathers Ditches Nos. 11, 12, 13	1872	1872	22.90*	36	SW1SW1	36	59	
			7.30*	36	NW1SW1	36	59	
			38.00*	35	NE1SE1	36	59	
			1.00*	35	NW1SE1	36	59	
			32.40*	35	SE1SE1	36	59	
Weathers Ditch No. 17.....	1879	1879	8.20	35	SW1NE1	36	59	
			18.40*	35	SW1NE1	36	59	
			40.00*	35	SE1NE1	36	59	
			29.70	35	SW1NW1	36	59	
			30.40	35	SE1NW1	36	59	
			12.10	35	NE1SW1	36	59	
			23.40	35	NW1SW1	36	59	
			.70	35	NW1SE1	36	59	
Total.....			359.10					

*Cleared pasture.

Claimant—W. W. Weathers, Deeth, Nevada.

Source—Ackler Creek.

Co-Op Ditch to Herder Creek, thence to Brennen Ditch and through Brennen Gulch to Weathers Ditches Nos. 9, 10.	1888	1888	40.00 22.20 6.10*	1	SE1SE1	36	59	
			20.60*	1	SW1SE1	36	59	
			6.00*	1	SE1SW1	36	59	
			14.80*	1	NE1SW1	36	59	
Total.....			109.70					

*Cleared pasture.

Claimant—W. W. Weathers, Deeth, Nevada.

Source—Waste water from John Riddell, C. H. Black and W. A. Lane Estate Ranches.

Natural Draw used as Ditch, thence through O'Brien Ditch.	1885	1885	35.00 22.20*	1	SE1SE1	36	59	
			5.00	1	SW1SE1	36	59	
				1	SE1SE1	36	59	
Total.....			62.20					

*This land is evidently irrigated from two sources; namely, the above source and Ackler Creek.

Claimant—W. W. Weathers, Deeth, Nevada.

Source—Waste Water from St. Clair Boulder Creek Ditch, thence through Weathers Ditches Nos. 7 and 8.

Weathers Ditches Nos. 7, 8.....	1888	1888	14.90 27.20*	2	NE1SE1	36	59	
			20.10	2	SW1SE1	36	59	
Weathers Ditch No. 14.....	1888	1888	21.90†	12	NE1NW1	36	59	
			8.40	12	NE1NW1	36	59	
Total.....			92.50					

OFFICE NOTE: †This land is evidently irrigated from three sources; namely, from the above source and Starr Creek and Boulder Creek.

*Cleared pasture.

Claimant—Charles Wells, Deeth, Nevada.

Source—Right Boulder Creek.

Ditch No. 4.....	1905	1905	14.10 8.89*	32	NW1	36	60	
			.42	31	NE1	36	60	
Ditch No. 5.....	1876	1879	4.68 3.49†	31	NE1	36	60	
				32	NW1	36	60	
Ditch No. 6.....	1876	1879	6.13 22.11*	31	NE1	36	60	
				31	NE1	36	60	
Total.....			59.82					

*Uncleared pasture.

†Partly cleared pasture.

OFFICE NOTE: For complete claims reference is made to original proofs, pages 210, 211. Abstract of Claims compiled March, 1916.

**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 10**

**Comprising the North Fork of the Humboldt River and its
Tributaries.**

In Elko County, Nevada.

Claimant—Diana Morgan Hill, Elko, Nevada.

Source—North Fork Humboldt River.

Ditch Title	Date when construction commenced (*)	Date when land first irrigated (*)	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Natural overflow.....			20.50	12	NW1	37			57
			48.00	11	NE1	37			57
			57.40	11	SE1	37			57
			49.50	11	SW1	37			57
			14.00	14	NW1	37			57
			6.00	14	SW1	37			57
			26.50	23	NW1	37			57
			16.00	23	SW1	37			57
Total.....			237.90						

FROM PROOF: This proof is filed as supplemental to proofs heretofore submitted and filed. Original cultural maps made no claim for water for above described lands, but later advice indicates it is advisable to do so.

These lands are naturally irrigated by overflow at flood seasons and are uniformly bottom portions lower than the main river bottom.

*No year stated in proofs.

Claimant—Diana Morgan Hill, Elko, Nevada.

Source—North Fork Humboldt River.

Sloughs and old water channels.....	1872	1872	66.00	25	E1SE1	38			57
			5.00	25	SW1SE1	38			57
			118.00	36	NE1	38			57
			14.00	36	SE1NW1	38			57
			72.00	36	SE1	38			57
			3.50	1	NW1NE1	37			57
			88.00	1	E1NW1	37			57
			12.00	1	SW1NW1	37			57
			43.00	1	W1SW1	37			57
			6.00	2	SE1SE1	37			57
			2.00	12	NW1NW1	37			57
			2.00	11	NE1NE1	37			57
			23.00	36	E1SW1	38			57
			36.00	25	E1NE1	38			57
Total.....			445.50						

FROM PROOF: This proof is filed as supplemental to the proof heretofore submitted and filed, for the purpose of correcting a clerical error appearing in said proof as shown on page 228, Abstract of Water Rights, where the acreage is incorrectly stated. (For the page 228 referred to see compilation of March, 1916.)

Claimant—Diana Morgan Hill, Elko, Nevada.

Source—North Fork Humboldt River.

Upper Ditch.....	1903	1903 to 1915	13.00	24	E1SW1	38			57
			63.00	25	NE1	38			57
			63.00	25	SE1	38			57
			19.00	25	SW1	38			57
			3.00	35	SE1SE1	38			57
			9.00	36	E1NW1	38			57
			10.00	36	W1SW1	38			57
			7.00	1	NW1NW1	37			57
			16.00	2	SE1NE1	37			57
			15.00	11	NW1NE1	37			57
Total.....			218.00						

FROM PROOF: This proof is filed as supplemental to the proof heretofore submitted and filed for the purpose of correcting a clerical error as appears on page 228, Abstract of Water Rights, wherein the lands are incorrectly described as to range.

Upper Ditch.....	1903	1903 to 1915	23.00	2	NE1NE1	37			57
			8.00	2	NW1NE1	37			57
			21.50	2	SW1NE1	37			57
			18.70	2	NW1NE1	37			57
			24.00	2	SW1SE1	37			57
			19.00	11	NE1NW1	37			57
			40.00	11	SE1NW1	37			57
			9.00	11	SW1NW1	37			57
			2.00	10	SE1SE1	37			57
Total.....			165.20						

FROM PROOF: Lands herein claimed as irrigated were not included in the original cultural maps because of fact that they were not owned by claimant.

Claimant—Diana Morgan Hill, Elko, Nevada.

Source—North Fork Humboldt River.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Middle Ditch.....	1895	1872* to 1895	14.00	25	SW $\frac{1}{4}$ SE $\frac{1}{4}$	38		57	
			5.00	25	SE $\frac{1}{4}$ SW $\frac{1}{4}$	38		57	
			6.00	36	NW $\frac{1}{4}$ NE $\frac{1}{4}$	38		57	
			42.00	36	E $\frac{1}{4}$ NW $\frac{1}{4}$	38		57	
			94.00	36	SW $\frac{1}{4}$	38		57	
			34.00	1	N $\frac{1}{4}$ NW $\frac{1}{4}$	37		57	
			28.00	1	SW $\frac{1}{4}$ NW $\frac{1}{4}$	37		57	
			18.00	1	W $\frac{1}{2}$ SW $\frac{1}{4}$	37		57	
			24.00	2	SE $\frac{1}{4}$ NE $\frac{1}{4}$	37		57	
			74.00	2	E $\frac{1}{4}$ SE $\frac{1}{4}$	37		57	
			24.50	11	E $\frac{1}{4}$ NE $\frac{1}{4}$	37		57	
			65.00	11	W $\frac{1}{2}$ NE $\frac{1}{4}$	37		57	
			31.00	11	NE $\frac{1}{4}$ SW $\frac{1}{4}$	37		57	
Middle Ditch.....	1895	1895	45.00	11	W $\frac{1}{2}$ SW $\frac{1}{4}$	37		57	
			.40†	2	NE $\frac{1}{4}$ NE $\frac{1}{4}$	37		57	
			1.50†	2	SE $\frac{1}{4}$ NE $\frac{1}{4}$	37		57	
			15.00†	2	NW $\frac{1}{4}$ SE $\frac{1}{4}$	37		57	
			8.00†	2	SW $\frac{1}{4}$ SE $\frac{1}{4}$	37		57	
			8.00†	11	NE $\frac{1}{4}$ NW $\frac{1}{4}$	37		57	
Total									537.40

FROM PROOF: *Some of this land was irrigated by means of sloughs as early as 1872. Claim is made for, and is of the earliest date.

†Lands herein claimed as irrigated were not included in original cultural maps, because of fact that they were not owned by claimant.

This proof is filed as supplemental to the proof heretofore submitted and filed.

Claimant—Diana Morgan Hill, Elko, Nevada.

Source—Springs, Sloughs, Creeks tributary to Foreman Creek, its forks and branches.

Natural irrigation, springs, sloughs and old channels with small diversion dams.	1874 and 1915	1874	82.50	15	SW $\frac{1}{4}$	41	54
			152.00	16	S $\frac{1}{2}$	41	54
			425.00	21		41	54
			122.00	22		41	54
			147.10	27		41	54
			227.00	28		41	54
			5.00	33		41	54
			423.50	34		41	54
			78.60	35		41	54
			208.30	2		40	54
			9.50	3		40	54
			147.90	1		40	54
			100.00	6		40	55
			130.00	5		40	55
			29.00	4		40	55
Total							2,287.40

FROM PROOF: This proof is filed as supplemental to the proof heretofore submitted and filed, for the purpose of correcting a clerical error on page 227 of Abstract of Water Rights, wherein the acreage is incorrectly stated.

OFFICE NOTE: The above data is taken from amended proofs. For complete claims, reference is made to pages 227, 228 Abstract of Claims compiled March, 1916.

Claimant—Diana Morgan Hill, Elko, Nevada.

Source—Springs and Spring Creeks, natural tributaries of North Fork of Humboldt River.

Natural irrigation.....	1873	317.10	3		41	54
		77.50	4		41	54
		160.50	9		41	54
		469.00	10		41	54
		109.00	15	N $\frac{1}{2}$	41	54
		90.50	16	N $\frac{1}{2}$	41	54
		7.00	11	SW $\frac{1}{4}$ SW $\frac{1}{4}$	41	54
Total						1,280.60

FROM PROOF: This proof is filed as supplemental to the proofs heretofore submitted and filed for the purpose of correcting a clerical error appearing on page 228, Abstract of Water Rights, wherein the acreage is incorrectly stated. (For the page 228 referred to see compilation of March, 1916.)

This tract of land draws from the east slope of the Independence Range of Mountains and

is naturally irrigated. The principal run-off from the east side of the Independence Range is not from streams, reaching into the mountains, but from the meadows at the foot. These meadows have existed as great natural hay meadows from time immemorial. Water springs up at the very grass roots and seeps across the entire meadow.

Owing to the peculiar and unusual conditions existing it is very difficult to conform to the prescribed form in submitting proof, some of the questions being hardly applicable to the conditions here described.

Claimant—Diana Morgan Hill, Elko, Nevada.

Source—Dry Creek, a tributary of Foreman Creek, tributary to North Fork Humboldt River.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Natural irrigation, old channel and small dams for local distribution.	1874-1915	1874	Abt. 125.70	25		S½	41		54
			55.00	25		S½	41		54
			46.70	30		SW¼	41		55
			24.00	31		NE¼NW¼	41		55
Total.....			251.40						

FROM PROOF: This proof is filed as supplemental to that heretofore filed, for the purpose of correcting a clerical error. On page 227 of the Abstract of Water Rights, the acreage is incorrectly stated. (For the page 227 referred to, see Compilation of March, 1916.)

Claimant—Thos. Kearns, Salt Lake City, Utah.

(Formerly Niels Petersen.)

Source—McAfee or Second Creek.

McAfee Ditch No. 1.....	April 1888	Bef. 1888	149.32	15			42		54
				22			42		54
Petersen Ditch No. 3.....	May 1894	1894	109.92	21			42		54
				22			42		54
Petersen Ditch No. 4.....	June 1894	1894	84.46	21			42		54
				22			42		54
Total.....			343.70						

NOTE: Sections in all of Petersen's claims in which land is located were taken from the cultural map, as no descriptions are given in the proofs.

Claimant—Thos. Kearns, Salt Lake City, Utah.

(Formerly Niels Petersen.)

Source—McAfee or Second Creek and flood water.

Petersen Ditch No. 12*.....	1890	1890	42.54	22	SW¼NE¼		42		54
				22	NW¼SE¼		42		54
				22	SW¼SE¼		42		54

*From amended proof.

Claimant—Thos. Kearns, Salt Lake City, Utah.

(Formerly Niels Petersen.)

Source—McAfee Creek.

Petersen Ditch No. 9.....	May 1896	1896	118.02	26			42		54
				36			42		54
		1897	59.02	26			42		54
				36			42		54
Petersen Ditch No. 10.....	May 1904	1905	44.65*	25			42		54
				26			42		54
		1906	44.65*	25			42		54
				26			42		54
Total.....			266.34						

*On first page of proof the total area of 89.30 acres is named as first irrigated in 1904.

Claimant—Thos. Kearns, Salt Lake City, Utah.

(Formerly Niels Petersen.)

Source—South Fork of McAfee Creek.

Petersen Ditch No. 5.....	June 1894	1894	66.56	21			42		54
				22			42		54

Claimant—Thos. Kearns, Salt Lake City, Utah.
(Formerly Niels Petersen.)

Source—Second Creek. Now known as McAfee Creek.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
McAfee Ditch No. 2.....	May 1888	1888	70.78	15			42	54	
				22			42	54	

Claimant—Thos. Kearns, Salt Lake City, Utah.
(Formerly Niels Petersen.)

Source—Walker Creek.

McAfee Ditch No. 6.....	May 1888	1888	42.65	27			42	54	
McAfee Ditch No. 7.....	May 1888	1888	20.82	27			42	54	
Total.....			63.47						

Claimant—Thos. Kearns, Salt Lake City, Utah.
(Formerly Niels Petersen.)

Source—Branch of Walker Creek.

McAfee Ditch No. 8.....	Spring 1890	1890	42.90	27			42	54	
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Claimant—Thos. Kearns, Salt Lake City, Utah.
(Formerly Niels Petersen.)

Source—North Fork of Humboldt River.

Petersen Ditch No. 11.....	Not given	1904	143.68	25			42	54	
				36			42	54	

Claimant—Ross M. Tremewan, Elko, Nevada. (Formerly Austin Gilruth Estate.)

Source—Mahala Creek.

Austin Gilruth Ditches.....	Prior to 1888	1884	16.63*	4	SE $\frac{1}{4}$ NE $\frac{1}{4}$	39	55		
			5.68*	4	SW $\frac{1}{4}$ NE $\frac{1}{4}$	39	55		
			1.40*	4	NW $\frac{1}{4}$ SE $\frac{1}{4}$	39	55		
			.56*	4	NE $\frac{1}{4}$ SE $\frac{1}{4}$	39	55		
			10.41*	7	NW $\frac{1}{4}$ NW $\frac{1}{4}$	39	55		
			.18*	7	SW $\frac{1}{4}$ NW $\frac{1}{4}$	39	55		
			26.37*	7	SE $\frac{1}{4}$ NW $\frac{1}{4}$	39	55		
			11.07*	7	NE $\frac{1}{4}$ NW $\frac{1}{4}$	39	55		
			1.17*	7	NE $\frac{1}{4}$ SW $\frac{1}{4}$	39	55		
			19.28*	7	SW $\frac{1}{4}$ NE $\frac{1}{4}$	39	55		
			13.17*	7	SE $\frac{1}{4}$ NE $\frac{1}{4}$	39	55		
			16.45*	7	NW $\frac{1}{4}$ SE $\frac{1}{4}$	39	55		
			20.19*	7	NE $\frac{1}{4}$ SE $\frac{1}{4}$	39	55		
			1.50*	8	SW $\frac{1}{4}$ NW $\frac{1}{4}$	39	55		
			7.78†	4	SW $\frac{1}{4}$ SW $\frac{1}{4}$	39	55		
			3.30†	5	SE $\frac{1}{4}$ SE $\frac{1}{4}$	39	55		
			1.88†	8	NE $\frac{1}{4}$ NE $\frac{1}{4}$	39	55		
			3.70†	7	SE $\frac{1}{4}$ NE $\frac{1}{4}$	39	55		
			7.49†	7	SW $\frac{1}{4}$ NE $\frac{1}{4}$	39	55		
			29.53†	1	SE $\frac{1}{4}$ SE $\frac{1}{4}$	39	55		
			4.62†	1	SW $\frac{1}{4}$ SE $\frac{1}{4}$	39	55		
			14.52†	1	NW $\frac{1}{4}$ SE $\frac{1}{4}$	39	55		
			3.79†	1	SW $\frac{1}{4}$ NE $\frac{1}{4}$	39	55		
			2.64†	1	SE $\frac{1}{4}$ NW $\frac{1}{4}$	39	55		
			.18†	1	NE $\frac{1}{4}$ SW $\frac{1}{4}$	39	55		
Total.....							222.94		

OFFICE NOTE: *Areas taken from map furnished by the State Engineer.

†Additional areas taken from map furnished by claimant.

FROM PROOF: Reference is had to the map furnished by the State Engineer; is accepted as correct as far as it goes, but it does not include all the land on the place, and additions have been made showing these other areas and are submitted herewith.

**ADDITIONAL AND AMENDED CLAIMS IN
DISTRICT No. 11
Comprising Mary's River and its Tributaries
In Elko County, Nevada.**

Claimant—Robert W. Anderson, Deeth, Nevada.
Source—"T" Creek.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
For ditch titles and dates see abstract of original proof, page 244, Compilation of March, 1916.									
	.45*	9	SE1NW1	43	59				
	5.40†	9	SE1NW1	43	59				
	3.90†	9	SW1NE1	43	59				
	14.95†	9	NW1SE1	43	59				
	26.65†	9	NE1SE1	43	59				
	2.80†	9	SE1SE1	43	59				
	1.87‡	9	SE1SE1	43	59				
	12.20†	10	NW1SW1	43	59				
	36.20†	10	SW1SW1	43	59				
	.50‡	10	SW1SW1	43	59				
	.60‡	10	SE1SW1	43	59				
	26.30†	10	SE1SW1	43	59				
	.20‡	10	SW1SE1	43	59				
	2.75	15	NW1NW1	43	59				
	1.00||	15	NW1NW1	43	59				
	16.10†	15	NW1NW1	43	59				
	2.85||	15	SW1NW1	43	59				
	1.00||	15	NE1NW1	43	59				
	10.70‡	15	NE1NW1	43	59				
	28.80†	15	NE1NW1	43	59				
	9.70†	15	SE1NW1	43	59				
	11.85||	15	SE1NW1	43	59				
	9.46‡	15	SE1NW1	43	59				
	23.50†	15	NW1NE1	43	59				
	5.40‡	15	NW1NE1	43	59				
	.80†	15	NE1NE1	43	59				
	37.55‡	15	SW1NE1	43	59				
	1.55‡	15	SW1NE1	43	59				
	30.85†	15	SE1NE1	43	59				
	22.00†	15	NE1SE1	43	59				
	4.25†	15	NW1SE1	43	59				
	7.20‡	6	NE1NE1	42	60				
	.87†	6	NE1NE1	42	60				
	1.73†	6	NW1NE1	42	60				
	25.53‡	6	NW1NE1	42	60				
	35.76‡	6	SE1NE1	42	60				
	2.63†	6	SE1NE1	42	60				
	1.61‡	6	SE1NE1	42	60				
	2.28†	6	SW1NE1	42	60				
	29.87‡	6	SW1NE1	42	60				
	1.36†	6	NW1NW1	42	60				
	12.82‡	6	NW1NW1	42	60				
	1.86†	6	NE1NW1	42	60				
	34.47‡	6	NE1NW1	42	60				
	8.22‡	6	SE1NW1	42	60				
	19.69‡	6	NE1SE1	42	60				
	.87‡	6	NE1SE1	42	60				
	.74‡	6	NW1SE1	42	60				
	1.47‡	5	SW1NW1	42	60				
	.25*	5	SW1NW1	42	60				
	8.93‡	5	SW1NW1	42	60				
	7.71†	5	NW1SW1	42	60				
	6.23‡	5	NW1SW1	42	60				
	.49‡	5	NW1SW1	42	60				
	3.10†	31	SW1SW1	42	60				
	21.30‡	31	SW1SW1	42	60				
	8.09‡	36	SE1SE1	42	60				
	14.20‡	36	NE1SE1	42	60				
	2.96‡	36	NE1SE1	42	60				
	10.96‡	36	NW1SE1	42	60				
	10.20‡	36	SW1NE1	42	60				
	1.48‡	36	SW1NE1	42	60				
	2.00‡	36	SE1NW1	42	60				
	1.00‡	36	SE1NW1	42	60				
	.62‡	36	NE1NW1	42	60				
Total.....				687.07					
†Meadow				279.77					
*Garden .....				.70					
‡Pasture, clear.....				18.46					
†Brush pasture.....				321.44					
||Grain				16.70					

Claimant—Robert W. Anderson, Deeth, Nevada.

Source—Mary's River.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
For ditch titles and dates see abstract of original proof, page 244, Compilation of March, 1916.									
	27.68†	34	NW1NW1	37	59				
	40.10†	34	SW1NW1	37	59				
	39.75†	34	NE1NW1	37	59				
	25.55†	34	SE1NW1	37	59				
	11.83†	34	SE1NW1	37	59				
	40.04†	34	NW1NE1	37	59				
	38.59†	34	NE1NE1	37	59				
	2.05†	34	NE1NE1	37	59				
	18.35†	34	SW1NE1	37	59				
	16.19†	34	SW1NE1	37	59				
	18.35†	34	SE1NE1	37	59				
	19.06†	34	SE1NE1	37	59				
	14.90†	27	SW1SE1	37	59				
	2.25†	27	SE1SW1	37	59				
	4.30*	27	SW1SW1	37	59				
	29.50†	27	SE1SE1	37	59				
	19.24†	35	NW1NW1	37	59				
	14.10†	35	NW1NW1	37	59				
	29.70†	35	NE1NW1	37	59				
	9.00†	35	NE1NW1	37	59				
	8.48†	35	NW1NE1	37	59				
	29.66†	35	NW1NE1	37	59				
	16.38†	35	NE1NE1	37	59				
	14.14†	35	NE1NE1	37	59				
	39.56†	26	SW1SW1	37	59				
	1.50†	26	NW1SW1	37	59				
	1.85†	26	NW1SW1	37	59				
	15.75†	26	NE1SW1	37	59				
	35.11†	26	SE1SW1	37	59				
	.15†	26	NW1SE1	37	59				
	.10†	26	NW1SE1	37	59				
	30.71†	26	NW1SE1	37	59				
	14.10†	26	NE1SE1	37	59				
	6.00†	26	NE1SE1	37	59				
	2.45†	26	NE1SE1	37	59				
	3.15†	26	NE1SE1	37	59				
	.20†	26	SE1SE1	37	59				
	18.75†	26	SE1SE1	37	59				
	14.80†	26	SE1SE1	37	59				
	2.90†	26	NE1SW1	37	59				
	.25*	26	SW1SE1	37	59				
	5.65†	26	SW1SE1	37	59				
	30.11†	26	SW1SE1	37	59				
	1.07†	26	SW1SE1	37	59				
	6.20†	33	NE1SE1	37	59				
	1.75†	33	NE1SE1	37	59				
	1.70†	33	NW1SE1	37	59				
	28.30†	33	NW1SE1	37	59				
	.10†	33	SW1SE1	37	59				
	4.25†	33	NE1SW1	37	59				
	1.55†	33	NE1SW1	37	59				
	.65†	33	SE1SW1	37	59				

Total..... 753.30

†Meadow..... 541.73

†Brush pasture..... 162.12

†Grain..... 41.75

†Yard and pasture..... 3.15

*Garden..... 4.55

FROM PROOF: "In support of the amendments and supplemental proof offered it is desired to show that at the time of making the former proofs the areas had not been determined accurately, but only by a very rough survey made independently of the State Engineer's office; and that upon a check of the survey by the State Engineer the areas as herein listed were found to be under irrigation. It is not desired so far as now known to make any changes except in the areas and culture as the same differ from that given in the original proofs as compared with the above listed areas."

Attention is called to the Abstract of Claims to the Waters of the Humboldt River and its Tributaries, published in 1916, by W. M. Kearney, State Engineer, said abstract containing 288 pages, wherein Ditch No. 6 is listed as having been constructed in the year 1906. Reference is made to proof No. 0752 covering this ditch wherein it will be noted that the water now used through the ditch was heretofore used under the Old Atkinson Ditch, constructed in 1889. Application is made to correct the abstract in that respect.

Also, attention is called to the date listed in said abstract for the construction of Ditch No. 2, the same being 1906. Reference is made to Proof No. 0753, wherein it will be noted that the water now used under this ditch is claimed under a priority of 1897. Application is made to have the same corrected in the amended abstract when published. (See page 244, Abstract.)

Attention is also called to an error in the designation of the township on page 244 of said abstract, under source Mary's River, line 12 should read R. 59 E, instead of 58 E.

**Claimant—Union Land and Cattle Co., Deeth, Nevada.
(Formerly Nevada Land and Cattle Co.)**

Source—Mary's River.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Sloughs formed by beaver dams..	Not given	1885	54.47	26	NE½	39	59		
			39.78	26	SE½	39	59		
			9.49	26	SW½	39	59		
			2.08	35	NW½	39	59		
			26.18	35	NE½	39	59		
			52.79	35	SE½	39	59		
			24.44	2	NE½	38	59		
			1.56	2	SE½	38	59		
			37.96	18	W½	39	60		
Total.....			248.70						
Cross Ditch and overflow from beaver dams.	Not given	1885	68.12	11	NE½	38	59		
			31.50	11	NW½	38	59		
			96.63	11	SE½	38	59		
			66.88	11	SW½	38	59		
			93.97	14	NE½	38	59		
			99.40	14	NW½	38	59		
			74.50	14	SE½	38	59		
			22.40	14	SW½	38	59		
			8.20	28	NE½	38	59		
Total.....			556.55						
Mason-Bradley Ditch.....	1901	1901	79.00	7	SW½	37	59		
			97.90	18	NW½	37	60		
			32.00	18	NE½	37	59		
			33.80	18	W½SW½	37	60		
			98.00	18	SE½	37	59		
Total.....			340.70						
Various sloughs and ditches.....	Not given	1883	43.70	18	SW½	37	60		
			1.70	13	SE½SE½	37	59		
			136.05	19	W½	37	60		
			67.74	24	E½	37	59		
Total.....			239.19						
Ditch No. 2.....	1903	1904	24.27	24	NE½	42	59		
			26.96	19	NW½	42	60		
			91.93	19	SW½	42	60		
			3.19	19	SW½SE½	42	60		
			71.88	30	NW½	42	60		
			4.43	30	NW½NE½	42	60		
			2.37	30	NE½SW½	42	60		
			5.94	24	NE½NW½	42	59		
			19.11	18	SW½	42	59		
Total.....			250.08						
Slough Ditch.....	Not given	1883	127.94	24	NE½	37	59		
			103.16	24	SE½	37	59		
			20.22	24	SW½	37	59		
			47.12	25	E½NW½	37	59		
			.30	25	SW½SW½	37	59		
			85.83	25	NE½	37	59		
			.84	24	SE½SE½	37	59		
			7.60	25	NW½SE½	37	59		
			88.96	25	SW½	37	59		
			.70	30	NW½NW½	37	59		
Total.....			482.67						
Check dams and small natural slough.	Not given	1885	172.61	31	E½W½	42	60		
				31	W½E½	42	60		
				31	W½SW½	42	60		
			125.47	6	NW½	41	60		
			7.65	6	NE½	41	60		
			83.79	6	SW½	41	60		
			.79	6	SE½	41	60		
			42.63	7	NW½	41	60		
			16.49	7	SW½	41	60		
			.66	7	NE½	41	60		
			26.26	19	W½	41	60		
Total.....			476.35						

UNION LAND AND CATTLE Co.—Continued.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Anderson Ditch.....	Not given	1886	39.20*	23	NE½	38		59	
			106.94*	23	SE½	38		59	
			74.40*	26	NE½	38		59	
			24.03	25	W½NW½	38		59	
			21.47	26	E½SE½	38		59	
			53.55*	25	W½SW½	38		59	
			.20*	25	SE½SW½	38		59	
			87.17*	36	NW½	38		59	
			121.84*	36	SW½	38		59	
			4.70*	35	SE½SE½	38		59	
			119.31*	1	NW½	37		59	
			92.00*	1	SW½	37		59	
			66.40*	12	NW½	37		59	
			17.00*	12	NE½SW½	37		59	
Total.....			827.71						
Cross Ditch.....	1900	1900	4.54	14	SW½SE½	38		59	
			11.00	14	NE½NW½	38		59	
			20.10	14	NW½NW½	38		59	
			2.90	14	SW½NW½	38		59	
			21.90	14	SE½NW½	38		59	
			20.00	14	NE½SW½	38		59	
			5.00	14	NW½SE½	38		59	
			.80	14	SE½SW½	38		59	
			8.90	14	SW½SE½	38		59	
			8.70	14	NW½SW½	38		59	
			58.35	23	W½NE½	38		59	
			28.53	23	E½NW½	38		59	
			7.40	23	NW½SE½	38		59	
			19.17	23	NE½SW½	38		59	
			2.30	23	SE½SW½	38		59	
			.56	23	SW½SE½	38		59	
		1901	14.20	23	SW½SE½	38		59	
			17.04	23	SE½SW½	38		59	
			78.54	26	NE½	38		59	
			20.10	26	E½NW½	38		59	
			119.63	26	SE½	38		59	
			83.08	35	NE½	38		59	
			14.20	35	NE½SE½	38		59	
			12.20	36	W½NW½	38		59	
Total.....			574.14						
Commatele Ditch.....	Not given	1899	10.56	18	SW½SE½	41		60	
			47.90	19	NE½	41		60	
			24.55	19	E½NW½	41		60	
			14.77	19	SE½	41		60	
			92.11	19	SW½	41		60	
			89.37	30	SW½	41		60	
			88.01	30	NW½	41		60	
			30.95	31	SW½	41		60	
			54.06	31	NW½	41		60	
			.86	31	SW½SE½	41		60	
			72.84	6	NE½	40		60	
			32.90	6	E½SE½	40		60	
			25.30	7	E½NE½	40		60	
		1900	51.88	6	SE½	40		60	
			78.28	7	NE½	40		60	
			53.19	7	SE½	40		60	
			6.63	5 & 8	W½	40		60	
			1.06	7	SE½NW½	40		60	
Total.....			775.01						
Cabin Field Ditch.....	1883	1884	7.17*	26	S½NE½	39		59	
			35.66*	26	SE½	39		59	
			55.65*	35	NE½	39		59	
			37.65*	35	SE½	39		59	
			.85*	36	SW½SW½	39		59	
			1.00*	2	NE½SE½	38		59	
		1885	98.68*	2	NE½	38		59	
			53.18*	1	W½W½	38		59	
			141.45*	2	SE½	38		59	
			16.70*	11	NE½	38		59	
			4.30*	12	W½W½	38		59	
		1886	66.82*	11	NE½	38		59	
			30.11*	12	W½W½	38		59	
			52.00*	11	E½SE½	38		59	
			34.06*	13	NW½NW½	38		59	
Total.....			635.28						

*Meadow and pasture.

UNION LAND AND CATTLE Co.—Continued.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Natural slough.....	Not given	1885	141.56	7	S½	40		60	
				18	E½	40		60	
Greasewood Ditch.....	Not given	1885	60.98*	24	SW¼	38		59	
			96.06*	25	NW¼	38		59	
				26	NE¼NE¼	38		59	
			57.81*	25	SW¼	38		59	
			14.56*	36	NE¼NW¼	38		59	
			1.40	36	NW¼NE¼	38		59	
Total.....			230.81						
					*Meadow and pasture.				
Buena Vista Ditch.....	1899	1901	56.08	19	SW¼SW¼	41		60	
				30	W¼NW¼	41		60	
			.79	19	NW¼SW¼	41		60	
			24.28	30	SW¼NW¼	41		60	
			5.00	25	SE¼SE¼	41		59	
			13.00	36	NE¼NE¼	41		59	
			16.00	36	SE¼SE¼	41		59	
		1902	55.72	30	W¼SW¼	41		60	
			93.03	31	NW¼	41		60	
			112.09	31	SW¼	41		60	
			47.82	6	W¼NE¼	40		60	
			73.22	6	E¼NW¼	40		60	
			56.62	6	W¼NW¼	40		60	
			53.97	6	E¼SW¼	40		60	
			24.80	7	W¼NE¼	40		60	
		1903	3.56	7	W¼NE¼	40		60	
			59.11	7	E¼NW¼	40		60	
			33.30	7	E¼SW¼	40		60	
			10.56	18	NE¼NW¼	40		60	
Total.....			738.75						
Horse Pasture Ditch.....	1883	1884	62.32*	14	E¼NE¼	38		59	
			.50*	14	NW¼NE¼	38		59	
			50.20*	13	S¼NW¼	38		59	
			65.30*	14	E¼SE¼	38		59	
			124.90*	13	SW¼	38		59	
			131.60*	24	NW¼	38		59	
			57.90*	23	NE¼	38		59	
			19.40*	23	NE¼SE¼	38		59	
			54.80*	24	N¼SW¼	38		59	
		1885	8.60*	23	SE¼SE¼	38		59	
			43.68	24	SW¼	38		59	
			14.40	24	W¼SE¼	38		59	
			42.73	25	W¼NE¼	38		59	
			31.79	25	NW¼	38		59	
		1886	67.54	25	W¼SE¼	38		59	
				25	SE¼SE¼	38		59	
			38.47	25	SW¼	38		59	
			84.77*	36	NE¼	38		59	
			82.99*	36	SE¼	38		59	
			75.32*	1	NE¼	37		59	
			11.42	6	W¼NW¼	37		60	
			48.98	6	W¼SW¼	37		60	
			53.04*	1	E¼SE¼	37		59	
			5.83*	12	NE¼NE¼	37		59	
			54.24	7	NW¼	37		60	
			.50	7	NE¼SW¼	37		60	
Total.....			1,231.22						
Pot Hole Ditch.....	1898	1899	8.66	6	SE¼SE¼	40		60	
			13.35	7	NE¼NE¼	40		60	
			7.90	7	SE¼NE¼	40		60	
			49.63	7	E¼SE¼	40		60	
			1.86	7	SE¼	40		60	
			32.60	8	W¼SW¼	40		60	
			55.17	18	E¼NE¼	40		60	
			34.31	17	W¼NW¼	40		60	
			38.85	18	E¼SE¼	40		60	
			10.94	18	E¼SE¼	40		60	
			58.43	17	W¼SW¼	40		60	
			60.21	19	E¼NE¼	40		60	
			4.77	19	E¼NE¼&				
					NW¼NE¼	40		60	
			36.92	20	W¼W¼	40		60	
			50.70	19	SE¼	40		60	
			4.50	29	NW¼NW¼	40		60	
			8.40	30	NE¼NE¼	40		60	
Total.....			477.19						
					*Pasture.				

UNION LAND AND CATTLE Co.—Continued.

Ditch Title	Date when construction commenced	Date when land first irrigated	Number of acres irrigated	Sec.	Subdivision	Tp.	N.	R.	E.
Island Ditch.....	Not given	1886	17.35*	36	NE½NW¼	38	59		
			9.00*	36	NE½	38	59		
			1.00*	36	NE½NW¼	38	59		
			37.20*	36	E½SW¼	38	59		
			22.86*	36	NW¼	38	59		
			48.36*	36	W½SE¼	38	59		
			78.56*	1	NE½	37	59		
			23.89*	1	E½NW¼	37	59		
			91.89*	1	SE½	37	59		
			2.55*	1	NE½SW¼	37	59		
		1887	120.14*	12	NE½	37	59		
			82.10*	12	SE½	37	59		
			30.01*	7	W½NW¼	37	60		
				7	SE½NW¼	37	60		
			21.92*	7	NW½SW¼	37	60		
			92.70*	18	NE½	37	59		
			41.80*	13	W½SE¼	37	59		

Total..... 721.33

*Meadow and pasture.

Marys River Ditch.....	1879	1879	20.80	33	SE½SW¼	37	59		
			26.20	33	SW½SW¼	37	59		
			3.90	32	SE½SE¼	37	59		
			6.70	32	SW½SE¼	37	59		
			1.40	32	SE½SW¼	37	59		
			7.20	4	NE½NW¼	36	59		
			20.40	4	NW½NW¼	36	59		
			6.10	4	SW½NW¼	36	59		
			30.80	5	NE½NE¼	36	59		
			17.20	5	NW½NE¼	36	59		
			31.00	5	SW½NE¼	36	59		
			12.50	5	NE½NW¼	36	59		
			11.80	5	NW½NW¼	36	59		
			2.10	5	SW½NW¼	36	59		

Total..... 196.60

Claimant—Union Land and Cattle Co., Deeth, Nevada.
(Formerly Nevada Land and Cattle Co.)

Source—"T" Creek.

Natural slough.....	Not given	1885	28.37	30	E½SW¼	42	60		
		1885	13.58	30	W½SW¼	42	60		
		1904	4.82	30	SW½NE¼	42	60		
		1904	4.35	30	SE½NW¼	42	60		

Total..... 51.12

Claimant—Union Land and Cattle Co., Deeth, Nevada.
(Formerly Nevada Land and Cattle Co.)

Source—Taber and Pole Creeks.

Ditch No. 1.....	1899	1899	72.97	14	NW¼	39	60		
			37.48	14	E½SW¼	39	60		
			31.66	14	W½SE¼	39	60		
			37.00	14	E½NW¼	39	60		
			51.97	23	N½	39	60		
			1.00	23	NW½SE¼	39	60		
			68.78	23	W½	39	60		
		1900	7.00	23	SW½NE¼	39	60		
			113.02	23	SE¼	39	60		
			123.00	26	NE¼	39	60		
			183.00	26	S½	39	60		

Total..... 666.88

REMARKS: A small plow ditch was taken out in 1882, and a small acreage irrigated for pasture up to 1899.

Claimant—Union Land and Cattle Co., Deeth, Nevada.
(Formerly Nevada Land and Cattle Co.)

Source—Taber Creek.

Ditch No. 2.....	1885	1886	66.02	12	E½	40	60		
				12	SE½SW¼	40	60		
				13	N½	40	60		

Total..... 66.02

UNION LAND AND CATTLE CO.—Continued.

<i>Ditch Title</i>	<i>Date when construction commenced</i>	<i>Date when land first irrigated</i>	<i>Number of acres irrigated</i>	<i>Sec.</i>	<i>Subdivision</i>	<i>Tp.</i>	<i>N.</i>	<i>R.</i>	<i>E.</i>
Ditches Nos. 1 and 2.....	Not given	1899	45.72	14	W $\frac{1}{2}$ NW $\frac{1}{4}$	39		60	
			5.39	15	E $\frac{1}{2}$ NE $\frac{1}{4}$	39		60	
			.30	15	NE $\frac{1}{4}$ SE $\frac{1}{4}$	39		60	
			1.27	14	SE $\frac{1}{4}$ NW $\frac{1}{4}$	39		60	
			102.16	14	SW $\frac{1}{4}$	39		60	
			71.95	23	N $\frac{1}{2}$	39		60	
	1900		29.10	23	NW $\frac{1}{4}$	39		60	
			116.63	23	SW $\frac{1}{4}$	39		60	
			110.00	26	W $\frac{1}{2}$	39		60	
Total.....			482.62						

REMARKS: A small plow ditch was taken out in the year 1882, and a small acreage irrigated for pasture up to 1899.

**Claimant—Union Land and Cattle Co., Deeth, Nevada.
(Formerly Nevada Land and Cattle Co.)**

Source—Bishop Creek.

McCausland Ditch.....	1881	1883	81.70	20	NW $\frac{1}{4}$	37		60	
			19.60	20	SW $\frac{1}{4}$	37		60	
			91.25	19	SE $\frac{1}{4}$	37		60	
			98.09	30	NE $\frac{1}{4}$	37		60	
			43.09	30	NW $\frac{1}{4}$	37		60	
			68.30	30	SW $\frac{1}{4}$	37		60	
			39.65	36	NE $\frac{1}{4}$	37		59	
			5.83	25	SE $\frac{1}{4}$ SE $\frac{1}{4}$	37		59	
			26.66	36	NW $\frac{1}{4}$	37		59	
			6.24	19	NW $\frac{1}{4}$	37		60	
			3.70	31	NW $\frac{1}{4}$ NW $\frac{1}{4}$	37		60	
Total.....			478.91						

**Claimant—Union Land and Cattle Co., Deeth, Nevada.
(Formerly Nevada Land and Cattle Co.)**

Source—Curran Creek.

Ditch No.....	1901	1902	68.77	18	SE $\frac{1}{4}$	40		61	
			14.12	18	SW $\frac{1}{4}$	40		61	
			29.82	19	W $\frac{1}{2}$ E $\frac{1}{2}$	42		60	
			32.30	19	NW $\frac{1}{4}$	42		60	
			13.29	19	E $\frac{1}{2}$ SW $\frac{1}{4}$	42		60	
			96.84	30	W $\frac{1}{2}$ E $\frac{1}{2}$	42		60	
Total.....			255.14						

**Claimant—Union Land and Cattle Co., Deeth, Nevada.
(Formerly Nevada Land and Cattle Co.)**

Source—Hanks Creek.

Ditches Nos. 1 and 2.....	1898	1899	51.05	36	S $\frac{1}{2}$	42		60	
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OFFICE NOTE: The amended proofs herewith are not the complete claims. For complete claims reference is made to abstract of original proofs on pages 246, 247, 248, 250, 251, and 252 of Abstract of Claims, compiled March, 1916.

Claimant—C. J. Weeks, Wells, Nevada.

Source—Bishop Creek.

Unnamed ditch.....	1889	1890	300.00	32	NW $\frac{1}{4}$ &W $\frac{1}{4}$				
					NE $\frac{1}{4}$	38		61	
				29	S $\frac{1}{2}$ SW $\frac{1}{4}$	38		61	
By survey—									
Meadow.....			246.06						
Pasture.....			36.84						

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STATE OF NEVADA

BIENNIAL REPORT

OF THE

Virginia City School of Mines

WITH A

tion of the Mining-School Problem for the
Taxpayer, Lawmaker, Board of
Education, and Others

1917-1918

DWIGHT T. SMITH, Instructor



CARSON CITY, NEVADA

OFFICE

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JOE FARNSWORTH, SUPERINTENDENT

1919



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REPORT OF VIRGINIA CITY SCHOOL OF MINES

able State Board of Education and others:

for the biennial period 1917-1918 have been fully up
former periods. The number who have availed themselves
have been less than usual. The reason is obvious, since so
are called to aid the country in the present great struggle.
at men have attended the school in this fiscal period. Of
two completed all of the courses, and two more have
o. There are others that have made excellent progress,
veral stages of completion. The rate of progress made
attendance is variable, and the elements which enter as
progress are stated in this report later. The average
s seven, and the lowest from the mean is five and highest

body has spent and have on hand a sum of money equal
er centum of the state appropriation. It has been
o match with state appropriations a certain sum of their
nd the above per centum was the amount they were able
is fiscal period.

e of monitorship by superintendents of local companies
their employ with regard to attendance is less or almost
is period. The privilege is granted to them in the
ne scarcity of men has been the reason for it.

een considerable testing of minerals to aid the prospector

particularly directed to the solution of the mining-school
s deemed that all attempts to arrive at improvements or
ons are best done from the standpoint of the solution
ch follows.

DWIGHT T. SMITH.



THE UNIVERSITY OF CHICAGO PRESS

ION OF THE MINING-SCHOOL PROBLEM

HISTORY

ock Extension Class," conducted here for a time by a
ector and usually assisted by another who came from
week about and alternating, from each of the depart-
rises which are related to the mining course there, was
as this school was instituted. This occurred by a legis-
1905, the school being placed under the management and
State Board of Education.

AUTHORITY GRANTED BY STATE BOARD

of this report, being the appointed "principal" of the
ed himself to President Stubbs of the University, he
e three members of the board, for instructions, and this
given in behalf of the board: "Do whatever you see
l stay by you." This instruction may be borne in mind,
quent part of this report the organization of the school

SEARCH FOR COURSES TO BE USED

ing the responsibility of the school an investigation was
purpose of finding what had been done in the way of
were most suitable. None were found other than those
ondence schools. Accordingly, it was thought that by
ground with a school that gave courses thus suggestive,
e much of the supposed disadvantage of giving a course
ence obviated. It should be noted the disadvantage was
afterward the extent to which this was an error of sup-
e apparent. But this suggestion was not the only one.
other out of the writer's experience that was combined
duce the plan of the courses. In the mine, mill, plant
e is a certain amount of communicating of ideas of any
t that is introduced, no matter what be the source. Let
to a mine from some distant field wherein the practice is
, and it will not be long until his information spreads.
ue of any topic taken up in the school. It will not be a
fore it will be introduced into the place of occupation

uggestions were put together for planning and conducting
Thus, in this particular, the school, mines, and plants
it were, into one establishment.
r of information for any one who may wish to make
f these first courses with any others, they will be pro-

FORMER COURSES

Subjects.

excavations, and the effect of it upon the immedi-
ounding rock which it is desired should remain
. This embraces what the miner means when he
be a miner one must learn to know ground," which

expression is a summing up to him, namely, how to mine in various rock conditions that are presented, the danger encountered, how to prevent injury or impairment to himself, to others, to his equipment, and to the work already completed, as well as to be at an advantage with that which is ahead.

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Smelting precipitates.

Sampling and testing solutions.

Tube-milling work.

Making the cleanup.

Settlers, etc.

Assay Office.

Types of furnaces and their management.

Preparation of samples and sampling.

Use of type fluxes in crucible assaying.

Operation of weighing and care of balances.

Cupellation and scorification.

Parting of beads.

Bullion melting and assaying.

"Wet" assaying, etc.

Surveying.

Care and use of instruments.

Making surveys and maps.

Blue printing, etc.

cal Drawing.

drawing instruments.

tric constructions.

g sketches of machine parts, timbering, rock drills,
etc.

ction of finished mechanical drawings from these

rinting.

ecting course.

PERMEATING SUBJECTS

g subjects were taught and they were made to permeate
egree each of the above courses as seemed to be required:

ithmetic, algebra, geometry, and trigonometry

imentary chemistry, with many exercises.

ognition of minerals.

cts were given before and simultaneously with the prac-

RECOGNITION OF EXPERIENCE OF OTHERS

plan of courses was followed from recognition of the
those in this field with courses antedating the school
reason, those doing so were regarded to be authority by
nd the plan was accepted without permitting an admis-
f whatever opinion there may have been of the plan.
he fact that there had been given to it a personal effort
an the best possible from the suggestions mentioned, and
hat it might be a success. Judgment had been reserved
s paid respect at least to the authority. These courses
he characteristics of being planned in the field of opera-
ished from any planned elsewhere.

nance at first was large and continued so until the men
at there was an attempt to teach them that which they
arned in a better school, namely, that of being practical
ndustry itself being the school. About three-fourths of
fell off.

ng one-fourth were mostly helpers or beginners. They
he visions of success and lingered on for a time. One
thought, could be prepared for the University and in
ers it was not thought advisable.

remained saw, however, that the best these courses could
was not equal to that in which they had employment
was a different exercise of observation and judgment,
ents and purposes a better school so far as they were

ATTITUDES OF INDUSTRIAL MANAGERMENTS

o rather extreme positions regarding that which operat-
desire to pay for and expect of their employees. Accord-
e, the employee is supposed to know a prescribed and
of doing his work. His individuality is at a minimum,
ced in the extreme instance to the position of being an
n the other hand, in accordance with the other position,

the employee is supposed to exercise more intelligence and be capable of taking the initiative suitable for an occasion, and have a probability of being able to do so, which the employee in the other case has very little of, and is not expected to have, he being in the case of the miner wherein it is at a discount.

One is represented by the factory hand and the eastern coal miner while the other is represented by the western metal miner.

Mining is an industry which attracts men of all sorts of professions and success, and there has been in this district, under observation for several years, companies representative of both positions, as well as others of various stages which were classed as being intermediate. Two attitudes or positions have been learned from observation by the miner on the ground.

The shift boss or foreman for instance, in one case is an owner and in the other case a director. It is found, for illustration, that there are also many whose idea of what they think should be done in the way of management is more or less of a confusion or mixture of the two ideas.

PRESENT COURSES VALUED AND RESPECTED BY THE DIFFERENT ATTITUDES

It should be stated that those in the present courses, which have not yet been considered, were as successful in the employment of the company that is exemplary of one position, as in the employment of the company representative of the other position, and equally successful for both, being valued in one case and respected in the other.

The former plan of course was carried on for some time by the company, but various changes and readjustments, but it became obvious that the present courses were not very successful with regard to results, and on the other hand, in order to have even a fair number in attendance the fees for the courses had to be lowered to the plane of being informationally encyclopedic.

Those who are representative of the three-fourths spoken of as having dropped out were not attracted. The same was true of those representative of the most desirable of the one-fourth that were mentioned as having remained longer.

SUCCESS OF THE CORRESPONDENCE COURSE

This situation cannot be wholly charged up to the school since the present courses were essentially those designed elsewhere by a staff of men in special business it was to be of the best ability to produce and conduct their courses. It was, and is, with the correspondence schools, a business enterprise and in order to be a success it was to their interest that the courses be the best possible. The most important information relative to this is that a correspondence course is not taken to the same extent by those who have had practical experience along the line of the course, and in the case of the extent to which the course is taken, it is usually done by beginners with practical work and experience and is seldom that they finish if they continue with their occupation.

The subscriptions to the courses are usually taken by those who are not engaged in the occupation or those who are remote from the line of their choosing. They often become very excellent in their work but it is after they have had sufficient experience to have become

led to the occupation, just as it is in the case of the graduate of the other school, except in the case of those who take the course of this school.

GRADUATES OF THE STANDARD SCHOOLS

ent regarding the graduate of any standard school of description requires no special comment since every one is to think of him as requiring a certain number of years of training to round out into full possession that with which he has been furnished. This fundamental assumption we will take occasion to mention.

Courses that have been programmed were in use for a time, but began to be seen to make its appearance. It was necessary, to seek a remedy and as soon as one could be found, these courses were to be discontinued. There was no doubt that could be found that was suggestive, but there was a lack of observation and experience, it was thought, which might have been The prospect at this time that there was a possibility of improvement in this juncture was not very encouraging.

THREE CLASSES DISCOVERED

It was at that time while three classes began to sort themselves out and to be seen into distinct view, there being particular care not to neglect their emergence by opinions, desires or views, or by the conditions or circumstances so long as they would conform to their outline, indicated afterward as we thought what

that the process of discarding the former courses began as fast as preparation could be made.

These classes we have been in the habit of regarding as primary, and third class.

Primary and secondary classes are of the same kind and the two have practically little in common with them.

These courses apply to the primary and secondary classes. It has been given the attention that was required for

EDUCATIONAL QUALIFICATIONS FOR ENTRANCE TO

PRESENT COURSES

Educational qualifications for admission to the primary course are of being able to read and write the English language. This is the only real qualification that there should be. The student should have at least one year of practical experience in the employment of an individual or mining company within which he has been actually productive—that is, his labor has been of remunerative value. One year of experience does not make a millman, a cyanide man, a flotation man, and so forth, but experience familiarizes him with a great number of facts, very numerous as they are, have a relation to his experience within the conditions of real production.

BASIS FOR SPECIALIZED REFINED COURSES

Basis for courses and with a specialized refined course we are to proceed. And before a great while the student was

doing work in mathematics and science, which work, it has been said, that men of academic and high-school connections have pronounced, "too difficult." They are in error. He was able to do the work and that is quite sufficient. He did not think that the courses were particularly difficult. On the contrary he thought that the courses were very nearly the right thing.

ATTENDANCE INCREASED

When the character of the courses began to be known and understood the attendance increased quite rapidly. During a period of good times in this district it was not unusual during a biennial period for a number of men to finish the courses. There was one year in particular after they began finishing which covered about a month and a half from the time the first man finished until the last one of the number finished. Seven men completed the courses. They were all excellent in their courses which requires that there be made the equal statement that they had become industrially excellent. The basis of the course on real production, the increased attendance and the results we shall again have occasion to consider.

After these courses had been introduced, there was a marked change for the better. The attendance was more regular and there was more time given each day to the courses than ever formerly had been given.

VALUE OF EXPERIENCE QUALIFICATION

The men of only local and those of one-district experience did not make the speed of progress that those of two-district experience made and so on. But those who came from the outside of the district with only one-district experience did better than those of only local experience for the reason that they were getting an experience that was being added to their former experience. Often times those of only local experience were advised to go elsewhere for a time. There could not have been an enforcement of this advantage of experience to the extent of being a requirement because that was due to the defect of the system or lack of system. The defect was something for legislative correction. It is quite obvious that if the refinement of instruction was based upon this experience the defect should have been removed.

PLAN FOR STATE ORGANIZATION

The following plan, which had been discovered through observation and experience, we hoped would be adopted. The items of the organization are essentially as follows:

The school to be made an integral organic part of the mining industry of the State, and each district to be entitled to an attendance that is proportional and determined by the ratio that the number of men employed in a district bears to the whole number of men employed in the mining industry of the State.

BOARD FOR CONTROL AND MANAGEMENT OF SCHOOL

The direction and management of the school to be under a local board consisting of the superintendents, foremen, presidents of the unions, and the instructor or "principal." At one time it was thought that the state board should be a part of this board, but later it was considered that the State Board of Vocational Education be substituted instead. This mining school board should be so constituted as

management and direction of the school within the control manage and direct the industry. It should be specified not delegate the responsibility to any other part of the any other constituted body.

the districts, there should be an appointing board composed of the above practical capacity.

in the school occurring from any district to be filled by g board of that district.

board, either before or upon the arrival of the appointee, me one within their employ for him if there does not a vacancy into which he may be put, or the exchange may ultaneously. The exchange, however, to be made in the according to the contingency. There should be no vacancy one set adrift in order to give each district its quota.

ntee should be required to bring with him credentials d, showing the amount and character of his experience.

having only local experience it is considered to be advisable to go elsewhere for a time, and upon their return show rm the board of the district in which they had the varied

ance of the school should not be compulsory but be of a ege. The student should be productive and if he fails in o attend there would then occur a double vacancy—one in d the other where he is employed.

DISCOVERED WHEN THIS WAS THE ONLY SCHOOL

no thought, at the time this plan was discovered, that the ever be to the trouble of more than one school. It was e courses were of gratifying effect in a voluntary way, parts of the State, both large and small, were paying he support and maintenance of the school, even the small- d have its proportional benefit.

rollment on account of the defect of the present system is the handicap could not have been. It was seen that e small chance of there being taxation without represen-

ADMISSION AND EXPERIENCE

is said in the printed announcement of the school and in n blanks for admission with respect to this experience is applicant. It was found that many who presented them- mission made a claim for their experience which precludes istly has for these courses.

PREPARATORY COURSE FOR ALL DISTRICTS ALIKE

rganism or plan was not supposed to apply to the third lass comprises those who, with preparation and together nical assistance, would be enabled to earn means to help niversity course. What they require is some technical egarding various operations. This should be of sufficient aracter to enable them to have "jobs" such as there are nills and plants. It was thought that perhaps they could from the University by correspondence.

dy exists at the University an institutional staff supposed

to be the best talent and best able to conduct the preparation for matriculation.

Other States are having good success in doing this, then why not Nevada? In this way the small and remote district is met, it would seem, and the influence of the University, as in the other States, would be more extended, there being brought to its gates students from all sections. To conduct the correspondence there would be required, perhaps, only slight additional expense.

The above is more in the nature of being planned than that which is presented in regard to the primary and secondary classes. It is offered merely as a suggestion. There may be other ways of conducting the preparation. This may be an opportunity for someone who might wish to extend the influence of the University and at the same time be a creditable showing for the one who succeeds at it.

PRESENT COURSE AND STATE ORGANIZATION A NATURAL SOLUTION

The organism or plan which it seems would remove the defect of the present system was disclosed by observation, and was as much of a discovery as was the principle of the specially refined course.

In giving the account of the refined course so far given and that yet to be given, and the organism, the writer is acting in the capacity of a reporter who is stating practically only that which he has witnessed. Being in the position of a witness he took particular care to be at one side and thus keep out of the way of nature, so as not to be an obstruction to that which would present itself.

Man, as is his usual custom, sees facts and relationships following upon one another and being in the succession in which he comes to them, and which depends upon the direction in which he has chosen to be, or he sees them in his own reflections in an order of his own choosing. In either case the natural order may be somewhat different or the reverse of his, and he may now and then get glimpses of realities and they may not be in the same sequence as his own.

If he attaches too much importance or places too much dependence upon his choosing, the glimpses he may get will have no significance and he will be inclined to think that there is no natural ordering of things or natural plan existing to serve the purpose of those things which he now and then gets a glimpse.

NOT THE RESULT OF INGENUITY

It is a characteristic of ingenious planning that there must be resolution to keep the plan in effect. It is the plan that is foremost. But in this case that is not true. The relation of plan to the course was reversed in their discovery. This was taken to signify that there had been a manifestation of reality.

When it had been found that there was a preparation that had been gotten by being engaged with real production and a course prepared that was effective and based upon that production, it was then seen that the services of the man had exchange value. Interchange and transference of men from one district to another was obvious.

The exchange should not occasion any more inconvenience than occurs in the case of accident to a man or sickness. Usually it is met by extras or by making a little different disposition of the men for a few

These are possibilities for which there are usually or always provisions to meet.

plan became more and more apparent in nearly every instance where who either came to the district or communicated with the school for the purpose of attending. But with few exceptions they decided that they must secure employment. Many of these men decided that they had the good qualification of experience. The difficulty was in securing employment. It is not to be supposed that the operators would send a man who was giving good service adrift in his place a stranger of whom they knew nothing.

In order to bring about greater regularity in giving the courses and the efforts of the school less divided, the transference could be made during vacation. This would also make the inconvenience not so sudden upon the employer. There could then be more regular formation and less of the individual instruction.

The plan is inseparable from the course and practically worthless by any other kind of a course.

PRESENT COURSE SUPERIOR TO FORMER COURSES

The fact that the attendance increased when the present courses displaced those previously in use, and produced results both in number and quality superior to anything formerly hoped for, deserves further mention than that already given to it, and it will be included in statements yet to be made in which the others will also be a part that have been mentioned for further consideration.

The statements making mention of those completing the former type of course which requires experience to follow in order to bring them to their own and the mention of the present refined course being based on real production, are those referred to as being the ones that have been mentioned for further consideration along with that which has said of the attendance increasing when the present courses displaced those formerly in use. That which has been said of the course referred to in these statements has been made as though they were apart, but the statements to follow will refer to them as being more or less inseparable, which is correct since they are related to one another as parts to the whole. It will be impossible to refer to any one of these that follows in which they have not been true in one way or another at the same time.

CHARACTERISTIC SUCCESS OF PRESENT COURSES

On the occasion to copy excerpts from the Fourth Annual Report of the Company for the fiscal year ending January 1, 1918:

In August, all chutes in the mine were equipped with never-controlled steel-gates, tracks regarded, and air-distributing system changed. The results were immediately evidenced by decreasing mining costs. For the remarkably low mining costs, your mine superintendent, Mr., deserves all credit.

Where this is said to have occurred in August of 1917. This man

completed the courses in the school about July 15, or the middle of the month.

Also for the remainder of the year it is reported:

During the year, 2,659 feet of development work was done, exclusive of stoping or surface trenching * * *. As a result of this work three important ore bodies were opened up, the cut, and stope. These ore bodies have been large producers during the year. and are now furnishing a considerable tonnage.

The opening of a large lense of residual primary ore comprising the ore body was an important development of the year. This was the first important body of sulphide ore opened on the property. It is being worked by the shrinkage method, over 1,600 tons of broken ore now being held in the stope. The cut was the largest producer, with the cut a close second. The latter was opened up during the year. At the beginning of the fiscal year, the development work at this point consisted only of two shallow trenches which had shown some values and the raise, which was started from drift.

The above was this man's first operative experience.

The superintendent whom he relieved at the mine was a graduate of a so called "standard" school. He had a few years of mining experience after graduation and had not yet come fully into his own. There is no particular reason to doubt but that in time the predecessor may become excellent and first class. He pronounced the mine practically "worked out" upon leaving it.

Let us see what the mine was made to produce in the year. After he left it, the man from this school immediately assumed the superintendency. The "total gross production" was \$271,034.18. The saving in operation expenses was \$9,577.

The report continues:

We have developed our mine until we have an abundance of ore ready for milling. We have by that development solved the problem of future mining and we are today mining, milling, and developing at the lowest cost of any silver property in Nevada.

Another man finished these courses about a month from the time that the above man finished and he went to South America. We have heard nothing from him and have no doubt but that he will give a good account of himself. There is reason to expect it because we are getting such reports of those who finished in previous biennial periods. There will be no reference to them because we are confining this report to this period, which, however, is under unfortunate enforced war conditions. The above results could not have been attained with the former courses and the attendance that there has been could not possibly have been so great had the former courses been continued. This is known from experience.

As regards the men who take these courses they are not in any way exceptional, being positively normal from every standpoint. There have been a few instances of those who were below normal from the

ary viewpoint, and their success was all that could be wished. may yet be occasion to refer to an instance "below normal," but present. We will continue with the subject of these courses.

COMPARISONS AND CHARACTERIZATION OF PRESENT COURSES

likely that there will be some desire for a characterization of the courses. In order that this be possible it must be done in terms not require a special knowledge such as that required in the a technical occupation to enable any one to judge of the value discerned. It must be in ordinary terms and about something is common knowledge in order that every one may be able to be worth of it. Some ordinary operation about which there are a few who do not know how to perform, or one which nearly dy knows a little, will be selected.

COMMON TYPE

will take the case of learning to swim. There was once heard of who desired to learn to swim, and he decided not to go into the at least not until he thought he knew how.

ook up the study of the properties of liquids under which he familiar with the items, specific gravity, center of buoyancy ter of gravity, and the relation of these to one another. He also course in mathematics. He decided that he should have some ents to prove certain things and also see what he could dis- o he procured a tub of water and into it he put a frog and a e noted that the fish could swim high and low and navigate with

He also observed the movements of the frog and saw him d come up again and swim across the tub with head out of water, ain stationary at the surface if he chose. He then studied the y of the fish and the frog, also that of himself, all of which we ant he could have as scientific knowledge. He made calculations imates wherein he made allowance for the differences between and the frog and what their effect would be. This done entirely satisfaction he went to the water. It is hardly necessary to ce the result. He could not swim.

e is no question if given a reasonable time, should he persist, gs being equal, he would become very skilful. But he must have erience which will give him the inurement.

represents a certain type of school that is very common—in niversal type. It is possible to carry the illustration to the end ill characterize not only the present courses in this school but at of several other types of schools. It is of no consequence r it be swimming or something different, the type is that which ed to be exemplified and that only. The illustration exaggerates at and only for the purpose of bringing the type into view.

PARALLEL TYPE

this man been a beginner in a service wherein he was receiving ration as a swimmer, for example, and these subjects which he , there being an indication that they were somewhat selected , adjusted on the basis of his real production, it would then be tration of the former courses, the correspondence course and ers of their type. This type is related to his occupation by

being in parallel with and contiguous to it. The type presumes to give information in how to perform his services while in fact he is certain to receive and may already have, as in most cases, information that is more practical. It is impossible to eliminate or even curtail or preclude its coming from his occupation, which is its source. If this type were made obligatory it would be imposed upon him. The former courses in the school were a compromise on the source of this information, but as has been shown, they were inexpedient. This type, while it is a branch paralleling the occupation and while it is a shoot put out from a long established trunk, it is root and branch produced by a different cultivation.

PRESENT COURSES ARE OF THE CONCURRENT TYPE

On the other hand if that information is recognized and credit given for the exercise of judgment that is required in order to have precision for efficiency, a step is taken toward another type. There must be admitted that there is observation of things going on in the surroundings. He learns by experience from a guided practice that is productive and in which every effort must be contributory to or be an execution of some service that as soon as performed has remunerative value.

He learns by seeing others doing their part and by working with them. When he first enters the occupation, he is put at some simple performance and continued at it until the surroundings become familiar to him, and as he comes to be put at different parts he therefore has some information regarding the part that is new to him before service before he cons that part. By exercise and practice he acquires efficiency and cleverness. And it all occurs under the influence of incentives that are a circumstance to real production and remuneration for services.

The course to be based upon all these facts about his manual progress must recognize them. The course must require certain facts to be known or found out in his experience; it must require also certain relationships to be seen in the same way; it must not attempt to present certain facts and relationships that can be had in practice, but must use them, however. There are other facts and relationships that the course should and of necessity must bring out, but not those that it should require to be had from the other source.

There is thus the necessity for the specialized course adjusted by worked-out refinement based upon that foundation. The course must not parallel the industry, but it must be concurrent with it. It does seem for that reason that it is the industry itself that should direct and manage the school that gives these courses.

The reason is perhaps obvious why so many of these men have been enabled to make the progress that they have made in mathematics and science, remembering that they had not the "preparation" from the customary standpoint and not required to be exceptional men.

WASTE AND PREPARATION BASIS

Since it is impossible to ignore that there is experience acquired in an industry and all which is acknowledged to be learned therefrom which is a basis for the production of men of greater efficiency, is it not

more a waste of one of the products of industry not to make use of some such way as this?

TEXT-BOOKS

Text-books can be had such as are in ordinary usage, but they are adapted to this type of course in the way that their authors prepared for the course they were intended. It would be better if specially prepared books were used. It is believed that such books should not have the text-book character as ordinarily produced or in the form of a discussion treatise. In these courses text-books are used but their value is qualified.

TRADES SCHOOL TYPE

There is another type of school that may be briefly characterized. Suppose that the man who wished to learn to swim had gone to the pool and taken lessons in swimming. He may be regarded as having come studying. We would then have an illustration of the trades school type. This type is like the first two in not being based upon real production. The product requires seasoning experience to render it most valuable because it was not produced within the environments of practical application.

TRADITIONALISM

The first, second and last type, namely the common or universal type, the paralleling type, and the trades school type appear to have no position relative to that which comes afterward.

Sometimes it seems that we cannot help, no matter how much we wish, not to do otherwise when we design a school, being prone to give it qualities that have descended to us from the remote past. Our ideas seem to be an inheritance, a sort of legacy, that has been bequeathed to us. And there does not seem to be the ability to behold more than the old idea no matter how much we change the form of the school to suit the times.

Suppose a well-equipped school of mines were given a mine, a mill, or a metallurgical plant entirely of its own choice and let the school select the mine and mill, there would still be the traditional idea remarkably present. There is no question that such a mine and mill would be a great help toward instruction, but there would not be a didactic that there might be if the industry itself controlled the school. This is not an antagonistic statement. The purpose in this is to bring attention to a type that has been overlooked. It is that there should be room for all the types. A university or other school cannot do what is done in a school like this, and conversely this school cannot do that which is done in a university or other school. There is not any one who would be more enthusiastic of a school of any of the other types to have a mill and plant than I am the writer.

Traditionalism seems to transcend our ideas and before we stop to think of considering education in any of the many aspects there appears to be an obsession.

The trades school might at first be thought to be free from it.

SELF-PRESERVATION THE FIRST INCENTIVE

With the trades type as it is with the other two referred to, for any particular field, that the environments are lacking. The struggle for existence on the part of the pupil is put off; it does not begin

when he enters the school; it is held in abeyance and the effects of a that are incentive are lost when they should be active. Self-preservation is anticipated and not immediately at hand. The parallel type is rather deceiving in this respect. The basis of preparation for a course does not recognize that the source of the preparation is in common with that for self-preservation. The parallel and concurrent types have been quite thoroughly tried out in order to know this.

SMITH-HUGHES ACT

From Bulletin No. 1 of the Federal Board for Vocational Education under the Smith-Hughes Act, it appears that there was in mind, when framing the act, the parallel and trades-school types.

PARALLEL TYPE REACTIONARY

The present course or concurrent type was more effective than the parallel type and doubtless was the reason for the coming of it in sight.

In that bulletin this statement appears: "Practical work on a useful or productive basis." When applied to the trades school from the point of view of the concurrent type, the production is imitative and the work is not like the practical because it has not the incitement from being progressively remunerated; and in the case of the parallel type the relation of the school course, planned as best it can be, reciprocating, but the course and the occupation are reactionary.

The circumstance of incentive to progress is not the same and does not have the possibilities that are presented in the concurrent course.

To go into a district and pretend to the operators that courses will be introduced that will prepare men for the occupation, if this were attempted, would be presuming somewhat on their credulity. They may be supposed, that should this be done, that it will have the acceleration of the operators because they are already deriving much benefit from recognition of the proposition that great achievements have been produced through efforts to apply science. As the proposition stands it may meet with some of their approbation, but suppose it is given the test of conversion. The restatement of it would be: Through efforts to apply science great achievements have been produced. The most likely would interpose an objection. The proposition now stands in the order of their experience and information. They may take the trouble to say that in their district there have been more failures than successes from such efforts, both in mining and metallurgy. And they are informed they will not confine the statement to their district alone, but will refer to others and continue until the world has been encompassed.

The science, like men, becomes valuable only after being seasoned in practical detail. Each occasion for application of the science requires something to be done to make it a success. In fact, practice goes ahead and beckons where science must follow and what it must become.

CONCURRENT TYPE MAY BE USED FOLLOWING THE OTHER TYPE

It seems, however, that there is the possibility that when the trades school type or the parallel type have been in use that the concurrent course could be taken up after they have been completed.

concurrent course was sufficiently long in existence and had a conservatism of its own before the Federal Act was passed. It is a fact that will be cited that will also indicate a qualification of the student as "backward" and "deficient" under the class "subnormal students" mentioned in the bulletin.

A young man who had been regarded as "impossible" in the ordinary school and being discouraged in finding that he could not make progress presented himself at this school for admission. He was to acquire about one year of experience in the part of the course that seemed most attractive to him, and if he found that the course proved to be to his liking he might then take up these courses.

WASTE ENERGY OBVIATED

There is proving whether it is going to be advisable to expend time and resource upon this man—something that is obviously more wasteful than in any other system. He did so and found that the vocational course was to his choice and as soon as he could throw off the state of mind conditioned from what was "school" to him, he got the "touch,"* and his determination took place and before a great while he was doing work of a high character and science of the character that would trouble his classmates to make on an examination 20 per cent while he was making 70 per cent or over. When he had completed and was given a position, wherein there was required to be a capacity for doing more than the average, his former teacher expressed astonishment at the progress of it.

OTHER DISTRICTS DESIRED SCHOOLS SIMILAR TO THIS

It is not surprising that other districts should wish to have schools similar to the same as this district. One district, that of Tonopah, was desirous to make the attempt and endeavored to move this school to that district was larger than this, but they did not succeed. Subsequently the legislature created a school for the district. Two other districts, Goldfield and Ely, were granted,

PRESENT COURSES TOO HEAVY FOR PARALLEL TYPE

The parallel type of school was not understood and it was supposed that if a mining school was created that was all that would be necessary to do. Naturally their courses were sure to be of the parallel type. It was not until there was an effort to give courses of the caliber of those given in this school. This was an error since these courses are not of that type.

SUDDEN REFORMS PROPOSED

There was an attempt, being unfamiliar with facts, to suddenly reform on the score of attendance, regardless of the fact that it had been results over and above any that had ever before been

achieved. A term from usage, came to mean getting into the spirit of the course. The "finish," of similar origin, and means the relation of the student to his vocation in the course. It is not completion. As soon as the student "finishes" the "finish" commences and the student is always, or very nearly, in a state of "finish," no matter if he discontinues before completion. The student takes up instruction in this style of course should understand those and the philosophy of the refinement.

attained, and like all sudden reforms that are not based on a coverly they usually get reformed in turn, not by any person, but the experience there is in store for those who attempt to put them effect.

Then followed the endeavor to change what appeared to the reformers were the defects of the present courses by planning the "second mining school courses," to which was added the plan of a school would travel, that is, the so-called traveling school or mining-car.

It appears that all that has been done has tended to be an obstruction to the progress of the present courses. As such was put effect they were each an addition to the obstacle that is the defect of the present system.

A comparison of the secondary courses in the particular of subject matter will serve to show that they are essentially the same as former courses planned for this school by the writer, and what benefit of them has already been given in this report.

DIFFICULTIES OBIATED

Had there been given attention to the plan for improvements the view to expansion that antedated all of the above things that been done, it seems that there would have been small chance of conflict with courses and attendance.

DEFECTS OF THE REFORM—STATIONARY AND TRAVELING SCHOOL

The defects of the reform are easily apparent. Suppose there were 100 mining districts in the State and only eight large enough to stop up for a visit of the traveling school. It is obvious there would be 92 districts that would receive no benefit, and in a State like Nevada not impossible but that there are times when the aggregate population of the 92 districts would be more than that of the eight districts.

Further, if the school remains three months in each of the districts there will be required 24 months for the school to visit the eight districts, it will be absent from each of those districts 24 minus 3 months or 21 months. The benefit of the school is suspended by the amount of 21 months from each of the eight districts and entirely absent from the 92. Should this plan be adopted it would seem to be clearly a burden of taxation without proportionate representation.

Should the number of districts for visits be increased the time of absence from each district in the cycle would be correspondingly increased, and if the number in the cycle be lessened the number of districts not visited would be increased.

Notwithstanding the defect of the present system there is for the stationary school some measure of success of migration toward the school, but in the case of the traveling school while it would meet that tendency in one place it would be moving away from that tendency in another. History has shown that a district that has proved itself of sufficient importance to have a mining school usually endures for more than six years.

It hardly seems likely that the legislature will be inclined to support both the stationary school and the traveling school should the latter be adopted.

SHOULD THE REMOVAL OF THE DEFECTS OF THE PRESENT SYSTEM BE LONGER DEFERRED?

To return to the present course and the organism or plan, both of which has been shown to be coherent and consistent with equal privileges for all and without special favors for the few, since, as has been designated, there is the traditional influence prevailing or is transcendent to all that appears to be undertaken in education and of which the above reforms are no exception, as can be clearly seen, it might seem in view of this that there ought to be a good reason for accepting the thing which differs no more from the customary types of education than did our first learning to read differ from the arithmetic we studied at that time. Each subject is transcended by assumptions with respect to which there was at the time a feeling that they ran counter to one another, hence the difference between them, that is, they could not at any time have been considered to be parts or phases of one and the same subject. But after those subjects were learned and subsequently found beneficial in experience and should any person raise an objection to either of them there would be a feeling very much akin to that of desiring to resent a wrong.

There is not, in the least, in their case, an inclination to resort to a deep difficult analysis or intricate argument required to know that they are beneficial, and there is a sense of not even thinking of a necessity for an inference.

Therefore, since this apriorism has always been good to be acted upon why then should it not be good again for the adoption of the type of course that has been beneficial and the state organization presented in this report?

MISTAKE OF SUFFIXING THE SCHOOL TO THE STATE BOARD

All of the other institutions of the State are under boards having a singleness of purpose to give them their attention, but in the case of this school that is not so. When the school was created it was suffixed to the State Board of Education. Subsequent events have shown that to have been a mistake. When the board was created, it was dedicated to the purpose of a uniformity of courses and regulations throughout, and the board existed for the public schools. There was no interest in this school and not in the least did it keep pace with the evolution of the school; in fact they knew practically little of what was being done. In the spring of 1913, preceding the convening of the legislature, the plan for improvements with a view to expansion was placed before the board and nothing was done with the plan. The defect of the present system still continues.

TABULATIONS SERVE TO ACCENTUATE THE DEFECTS OF THE PRESENT SYSTEM

Tabulations of items under heads of classification usually show quantity and not quality of results. Two or three blank forms have been received, filled out and returned and they were of this character, and recently another form has been sent to be given the same consideration and it, like the others, simply serves to further accentuate the defect of the present system.

AUTHORITY TRANSFERRED TO THE STUDENT BODY

The by-laws of the students provides the manner for fixing school periods and vacations suited as best they can be so as not to be at a disadvantage to the present courses under the existing conditions. They are fixed from time to time by vote. In some years there were only two weeks vacation for the entire year. The by-laws are essentially the same in outline as they were in the days of the University Extension Class. Doubtless those who framed them saw the advantage in having the students raise funds over what there would be if the school attempted to do this, and there cannot be any doubt but that those who did so were correct. During some of the most favorable fiscal periods the students have matched with state appropriations as high as 30 per centum of that appropriated. The students do not appropriate their funds, but they reserve the right to use their funds at their own direction, and the funds are always in their own possession and not in the possession of the instructor or school. The Extension Class advanced part of the salary of the instructor. It is obvious that since their funds are raised by due payments and admission fees, it has been thought best for them to regulate the periods.

When the writer arrived at the school upon his appointment he saw the situation. There was the right of property already existing in the by-laws of the students, and had he been inclined to disregard that right or confiscate it there was embarrassment. On the other hand there was the obvious advantage contained in the by-laws for the raising of funds and remembering the instructions and the authority of the board giving them, he could "see fit" to part with the authority granted him as "principal," and placed himself in obedience to the student body and thereafter chose to be designated the instructor. As soon as the above was done, the by-laws of the Extension Class were brought forward for the school. There has not been a single instance of departure from the recognition of the authority of the student body in this particular. Any difficulty on that score could not have been foreseen and there was no reason to resort to contriving in this matter since the authority that gave the instruction, which was followed, was considered clear. Hence, does it not seem that resolutions regarding school periods and blanks to be filled out and so forth should be addressed to those who are responsible and whose duty it is to receive them rather than to one who is subordinate and inferior in such affairs?

In the meantime, between the organization of the school and the passing of the resolution regulating the school, the present courses also having been effective for several years, the personnel of the board had entirely changed, and they were uninformed as to what had previously been done in the way of disposition of authority.

The board, on account of its own sufficiency, could not realize the possibility of itself and a previous disposition of authority as both already being a part of a situation which the members supposed they were producing for the first time when they endeavored to place the authority in the trust of another organized body.

The lack of interest that there had been previously and also in the case of themselves seemed adequate for the appearance of the necessity that there could not possibly have been a former disposition of authority, and thus they placed themselves in the attitude of not inviting a presentation of any statements that would give such information. This

sequently, to the organization of the school as well as to the courses.

Legislative enactments creating the so called "secondary mining" already mentioned, the board saw to it that those schools and under the organized body into whose hands they intended this school. And on the ground that there should be uniformity throughout the original intention was supposed to be brought by passing the resolution to that end.

It was thought most likely that by having more schools the defect of small attendance at the school would be remedied and since the attendance at the school had been counted small, it was reasoned the results would not have been large, therefore the good results were of a future extent that by making the deliverance there would be a transfer of success like that had in this school, but on a larger scale would resound to the credit of the other body and that there was no fear but that in due time the past record to the credit of this school would soon be lost to view. The legislature failed to investigate the solution.

It is the rub—after two or three years of an endeavor to use the school erroneously supposed to be the courses of this school there were the results that had been expected, so attention was turned to the forms.

In making schools, the passing of the resolution and the reforms that were being let attempted, it and those intrusted with the reform were headed straight into difficulties which they are alone responsible for not having investigated. Had there been recognition of making a refusal of the plan for improvements that would have been a basis for the state organization set forth in this report there is very little likelihood of difficulty with small attendance and with the courses.

The results of the school are larger, being cumulative, than those of the reforms are in any way prepared to recognize and now much is done from their standpoint, the past results are lost and redound to the discredit of what is done from that standpoint.

After passing the resolution that was to make a deliverance of the school, an appointment with the chairman of the board was made for a review. It was granted and upon arriving at the office there was surprise at finding a predisposition not to refer particularly to anything pertaining to the school.

A course of about a month, in the face of this disappointment, a man of the board was again communicated with and there was learned out of experience to be of any assistance there might be the ability of being to those who would have to do with courses.

There are others who have recognized in whom the authority is placed for the management and control of whatever is done in this field. Recently at Halleybury, Canada, a school has been opened and the vice says: "It is managed by a board representing several companies. The board consists of superintendents and the experienced staff of geologists and metallurgists that are in the employ of the companies. It is that in that county there have been various experiments with the above is the outcome of it, which seems to confirm our observations of the past several years. The school starts with an equipment estimated at \$10,000 and 35 students.

for the secondary mining schools. The communication was forwarded to the Mackay School of Mines and before long there came a notice that there was to be a conference of principals of the secondary schools and it was desired that the writer be present. At the conference he was permitted to give only that which would contribute to a pre-arranged plan. It certainly was a peculiar conference so far as specialized experience was admitted to be a part after volunteering to be of service and the offer accepted. This also characterized the visit to the school previous to the passing of the resolution. The visit, so far as could be made out, was apparently supposed to be some sort of an investigation.

On this occasion there was no information given that would indicate the necessity for giving or for volunteering any.

The assemblyman who had the bill in charge for the creation of the Tonopah School, on his own initiative, made an appointment with the writer for a conference but this never materialized. In addition to the missions referred to there were indicated in biennial reports the basis for the present courses.

Throughout all of the above transactions there was the circumspect manner obvious and there was a show made of keeping their own counsel as to what they intended to do.

What ground or reason there could be for this has never been clearly understood. In fact the results of the school certainly would seem to warrant the opposite consideration.

The result was, that we were forced into a similar position as regards them and not of our own choice. But from the fact of our being in that position, the show they made of keeping their own counsel was not a disadvantage to us for it served the purpose of not being obliged to show the appearance of having any of our own which we were keeping.

This, however, was not making progress. It was not getting at the solution of the problem which it does seem all of those connected with it should engage their attention to do without putting any one in a privileged position with a special invitation to all others to leave it alone—a "hands off" policy.

Either the one or the other must have sway. They cannot exist together. And it seems that the one which is plunging deeper into the defects of the present system is certainly not going to solve the problem.

But still there is the entreaty to prolong the entanglement with those defects. Thus we have "stood at the parting of the way."

TRIBUTE TO THE ENVIRONMENT OF THE COMSTOCK

The school became what it is in the midst of surroundings that were made classic by all that specially distinguished the Comstock and likewise Nevada, for the Comstock when at the zenith of the fame it had was virtually the master influence when statehood was assumed.

The world had never before beheld such a wealth of ore of the character and magnitude as was here presented. The problems of mining and ore treatment were equally new and huge and called for the best efforts having the quality that was required to solve them.

But these were not the only problems. There were legal problems that were apparently equally as insurmountable. And for all that was

here was a bountiful reward offered by nature to be had
ing. There were no precepts or examples that could be
depended upon.

one of the best tributes that could be paid to the talent of
was the criticism from the chair of jurisprudence of one of
and leading universities of this country. It was said:
States in the Union, Nevada has the best Constitution."

strange, therefore, that having environments such as these
ould become a community of people with a singular genius
with things at first hand. There were dark days and bright
was not infrequent that the darkest days were followed by
bright. There was never a time utterly devoid of hope.

seems most fitting that it should have been here, best suited
om the environment of nature, to be the place to first offer
n to the miner and most fitting also that it should be here
ould be first a solution of the problem on a scale suited and
on to the necessity—a solution that would be most sure to
f the character of all that is in accord with the traditions

DWIGHT T. SMITH.



STATE OF NEVADA

SECOND BIENNIAL REPORT

OF THE

COMMISSIONER OF LABOR

1917-1918

ROBT. F. COLE
Commissioner of Labor



CARSON CITY, NEVADA
STATE PRINTING OFFICE—JOE FARNSWORTH, SUPERINTENDENT

1919



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LETTER OF TRANSMITTAL

HONORABLE JAMES D. BOYLE, *Governor of Nevada.*

In compliance with Chapter 203, Section 2, Laws of the State of Nevada, I have the honor to present to you, and through you to the Honorable Senate, the Second Biennial Report of the Commissioner of the State of Nevada for the years 1917 and 1918.

Respectfully yours,

ROBT. F. COLE,
Labor Commissioner.

CARSON CITY, NEVADA, January 1, 1919.

LABOR COMMISSIONERS

WM. E. WALLACE.....	1915-1917
ROBT. F. COLE.....	1918-

PERSONNEL OF THE DEPARTMENT

ROBT. F. COLE.....	Labor Commissioner
ADELINA RAFFETTO	Stenographer

SECOND BIENNIAL REPORT

INTRODUCTION

In presenting the Second Biennial Report of the Labor Commission of Nevada it is believed that both the descriptive and suggestive report may be better understood if the introduction deals with the origin and purpose of the commission before describing the work and the order of its presentation.

Origin of the Labor Commission

In the early years the labor organizations of Nevada advanced the cause of a Labor Commission in this State, but it appears that all legislative action with respect to industrial affairs considered the business interests, and failed to recognize the great interests engaged in the industries. In the year 1907, a board of State Industrial and Publicity Commission was established and was replaced in 1911 by the Nevada Bureau of Industry, Trade and Irrigation. Both of these commissions were more related to the commercial and business side of industrial production than to the wage-earning side, and the labor organizations continued to agitate for a separate department in the State Government which would not contain a blending of the business interests and the interests of the wage-earners.

In 1915 there was a more popular demand for a commission to protect the interests of the workers and an act was introduced by the Senate which received the support of both the legislature, and was signed by the Governor on March 24, 1915. This measure related especially to the development and welfare of the wage-earners and constitutes the present law, which I quote for ready reference as follows:

Organic Act of the Labor Commission

Act creating the office of labor commissioner of this state, providing for the appointment of such commissioner and other employees, defining his duties and fixing their compensation, and providing a penalty for violation of its provisions, and other matters relating thereto.

[Approved March 24, 1915]

There is hereby created the office of labor commissioner of the State of Nevada, and one member of the Nevada Industrial Commission, other than the governor, shall be designated by the governor to act as ex officio labor commissioner. Said commissioner shall receive as compensation for his services a salary of six hundred (\$600) dollars per annum, payable in monthly installments out of the state treasury of Nevada as other laws may provide. Said commissioner shall receive his actual necessary expenses when traveling in the discharge of his official duties, and such clerical or stenographic assistance, not to exceed the sum of one hundred (\$1.200) dollars per annum, as may be approved by the board of directors.

The labor commissioner shall collect and systematize, and present in

biennial reports to the governor and legislature statistical detail relating to labor in the state.

SEC. 3. Said statistics may be classed as follows:

First—In agriculture.

Second—In mining.

Third—In mechanical and manufacturing industries.

Fourth—In transportation.

Fifth—In clerical and other skilled and unskilled labor not mentioned above.

Sixth—The number, age, sex, and condition of persons employed, the nature of their employment, the extent to which the apprenticeship system prevails in the various industries, the number of hours of labor per day, the average length of time employed per annum, and the net wages received in the industries and employments in the state.

Seventh—The number and conditions of the unemployed, their ages, sex, nationalities, and the cause of their unemployment.

Eight—The sanitary conditions of workshops, dwellings, the cost of rent, food, clothing, and necessities of life; the extent to which labor-saving processes are employed in the displacement of labor.

Ninth—The number and the condition of the Chinese and Japanese in the state, and to what extent their labor comes into competition with the labor of the industrial classes of the state.

Tenth—The number and nature of the employment of inmates in state prisons and county jails, and the extent their employment comes into competition with labor outside of these institutions.

Eleventh—The number of hospitals within the state; the number of hospitals maintained through cooperative arrangements between employers and employees; the cost of maintenance thereof; the amount of fees charged for hospital, medical, and surgical attention to employees in the state; the character and arrangements of the maintenance thereof between employer and employee; the sanitary condition and efficiency of such hospitals; the nature of their equipment and the character of services, expert and otherwise, rendered therein.

Twelfth—A description of the different kinds of labor organizations within the state, their object, purposes, and accomplishments, as near as may be.

Thirteenth—The number of employment bureaus or agencies within the state, their character and nature of their business, requirements, fees, and services.

Fourteenth—All such other information in relation to labor as said commissioner may deem essential to further the object of this Act.

SEC. 4. Said commissioner shall inform himself of all laws of the state for the protection of life and limb in any of the industries of this state, all laws relating to the hours of labor, the employment of minors, and all other laws enacted for the safety of the public and for the protection of employees; and it shall be the duty of said labor commissioner to enforce all such laws in the state, and whenever after due inquiry he shall be satisfied that any such law has been violated he shall present the facts to the district attorney of any county in which such violation occurred, and it shall be the duty of such district attorney to prosecute the same.

SEC. 5. Said labor commissioner shall cooperate with such bureaus, departments of labor of the national government and other states as may be established.

SEC. 6. It shall be the duty of all state, county, and precinct officers to furnish upon written request of said labor commissioner all information in their power necessary to assist in carrying out the objects of this act.

SEC. 7. The office of the bureau shall be open for business from 9 a. m. until 5 p. m. every day, except Sunday and the holidays observed by other public officers; and the office shall give all persons requesting it needed information which they may possess; *provided*, that no information that is of such a nature that it would be against public policy and against the best interests of the state shall be given to any one.

SEC. 8. Said labor commissioner shall have the power to examine witnesses, administer oaths, and take testimony in all matters relating to the duties and requirements of this act, and such testimony shall be taken in some suitable place in the vicinity to which the testimony is applicable. Said labor commissioner may compel the attendance of witnesses, and may issue subpoenas; *provided, however*, that no witness fees shall be paid to any witness unless he is required to testify at a place more than five miles from his place of residence.

the witness shall be paid the same fees as a witness before a dis-
 ch payment to be made from the fund appropriated for such
 e county in which the testimony is taken and witness examined
 nner as provided for the payment of witness fees in the district
 ounty. Any person duly subpoenaed under the provisions of this
 all wilfully refuse or neglect to testify at the time and place
 subpena, shall be guilty of a misdemeanor, and upon conviction
 e punished by a fine of not less than one hundred dollars nor
 hundred dollars, or by imprisonment in the county jail not less
 nor more than thirty days, or by both such fine and imprisonment.
 labor commissioner shall have the power to enter any store,
 office, workshop, mine, or public or private works at any reason-
 purpose of gathering facts and statistics contemplated by this
 amine safeguards and methods of protection from danger to
 sanitary conditions of the buildings and surroundings, and make
 of; and any owner, corporation, occupant, or officer who shall
 try to said labor commissioner, his offices or agents, shall be
 misdemeanor, and upon conviction thereof shall be punished by a
 than one hundred dollars nor more than five hundred dollars,
 ment in the county jail not less than ten days nor more than
 by both such fine and imprisonment.

labor commissioner is hereby authorized with the approval of
 examiners, to compile and issue such bulletins pertaining to labor
 of the state as he may deem necessary, and such bulletins, when
 printing and distribution, shall be printed at the state printing

l commissioner shall prepare forms and blanks for the purpose of
 information and statistics required by this act, and may require
 m or corporation to give the information and statistical detail
 such forms, and any person, firm, or corporation who shall refuse
 a detail and statistics in the form required shall be guilty of a
 and upon conviction thereof may be fined not less than one
 s nor more than five hundred dollars.

forms, blanks, envelopes, letter-heads, and reports required to
 aid labor commissioner may, with the approval of the state board
 be printed at the state printing office.

shall be the duty of the district attorneys of the several counties,
 t of the labor commissioner, to prosecute all violations of law
 reported to said district attorney by the labor commissioner.

r the purpose of carrying out the provisions of this act there is
 related, out of any moneys in the state treasury not otherwise
 the sum of five thousand (\$5,000) dollars. All salaries and
 erated in this act shall be paid from the appropriation named in
 l shall in no manner be taken from the general fund of the state.
 e labor commissioner shall be provided with properly furnished
 apitol in Carson City, Nevada.

General Policies

asly the intent of the law creating the Labor Commission
 operate to promote the welfare of the wage-earners and
 industrial conditions. That this purpose or policy should
 both organized and unorganized alike is equally manifest
 aim of the present commissioner to treat with both classes
 an impartial manner. However, the difficulty of close
 with unorganized labor must be apparent to everyone since
 ough organization that any group of persons may be ade-
 d. Dealing with individuals has its limitations and the
 s greatly handicapped in learning the ailments and applic-
 to those who choose to live to self in the great industrial

Commission finds its most available cooperation with the
 who are organized into trade unions and who act through

chosen officers and selected committees, and is thereby able to administer much more effectively the general intent of the law to those who are favored by membership in the labor unions.

The commission's policy to deal fairly is no less manifest toward employers and their organizations, as the harmonious relations between the employer and employee is absolutely essential to the effective promotion of industrial justice.

Stated in brief, it is the policy of the Labor Commission to increase the work of law enforcement with a firm hand; to enlarge the functions of friendly mediation in labor disputes; and to promote generally the welfare of all wage-earners. In doing this it is the supreme motive of the commission to display impartial courtesy in its dealings with wage-earners, employers of labor and the public.

Duties of Labor Commissioner

A casual reading of the law establishing the Labor Commission will fail to show the scope of the act, but a careful study and examination of its various parts clearly indicates that it is intended to cover a broad field of activity. The functions of the Labor Commission appear to be many and varied applying not only to those who toil, but embracing a scope which in some particular affects every citizen of the State. A brief outline pointing out the most important functions follows:

Gathering and Reporting of Statistics—Section 2 of the law creating the Labor Commission provided that "Said commissioner shall collect and systematize, and present in biennial reports to the governor and legislature statistical details relating to labor in the state." The statistical details here referred to are set out at some length in the law itself, but they may be best visualized by making a brief subdivision of three general divisions as follows:

1. Statistics on Employment.
 - (a) In agriculture,
 - (b) In mining,
 - (c) In manufacturing,
 - (d) In transportation,
 - (e) In other industries.
2. Competition in the Fields of Labor.
 - (a) Labor-saving processes.
 - (b) Chinese and Japanese labor,
 - (c) Prison labor.
3. Miscellaneous Subjects.
 - (a) Apprenticeship,
 - (b) Unemployment,
 - (c) Employment bureaus,
 - (d) Labor unions,
 - (e) Hospitals,
 - (f) Cost of living.

Enforcement of Labor Laws—Section 4 provides that "Said commissioner shall inform himself of all laws of the State for the protection of life and limb in any of the industries of the State, all laws regulating the hours of labor, the employment of minors, and all other laws enacted for the safety of the public and for the protection of

and it shall be the duty of said commissioner to enforce the laws in the State." Briefly, the laws which the Labor Commissioner is required to enforce may be listed as follows:

- (a) Hours of labor,
- (b) Employment of minors,
- (c) Safety laws for employees,
- (d) Safety laws for the public.

of Places of Employment—Section 9 provides that the commissioner "shall have the power to enter any store, foundry, workshop, mine, or public or private works at any reasonable time for the purpose of gathering facts and statistics contemplated by law and to examine safeguards and methods of protection from injury to employees; the sanitary conditions of the buildings and surroundings and make a record thereof." In a few words, the inspection of the Labor Commissioner may be summed up as follows:

- (a) Gathering of statistics and facts.
- (b) Examination of safety appliances,
- (c) Examination of sanitary conditions.

and Conciliation of Labor Disputes—The duties described in this section are not found in the law creating the Labor Commissioner. The power to act is authorized by direction of the Governor in the provisions of section 1929, Revised Laws, reading in part as follows: "Whenever a controversy concerning wages, hours of labor, or conditions of employment shall arise between an employer and his employees, seriously interrupting or threatening to interrupt the business of the employer, the Governor shall, upon the request of either party to the controversy, with all practical expedition, put himself in communication with the parties to such controversy, and shall use his best efforts by mediation and conciliation, to amicably settle the same. He may exercise such powers of conciliation himself, or appoint an agent for that purpose." Under the terms of this law the Labor Commissioner has quite properly employed the services of the Labor Commissioner in several controversies which have arisen in the State, and the work of the Labor Commissioner has developed quite rapidly during the past year and offers a broad field of activity in the future on account of the fact that the trend of the times seem to indicate a desire by capital and labor to settle disputes by the orderly method of mediation and conciliation rather than by the outworn method of matching their strength in industrial warfare.

The outline clearly demonstrates the varied duties of the Labor Commissioner and shows something of the importance of the position which was created by the legislature of 1915. The success of the department depends not only upon the integrity, capability, and energy of the commissioner himself, but also upon the cooperation of the public, employers, employees, and the general public; and the appropriations given by the legislature of the State in the past have been entirely insufficient for effective

Change of Commissioners

It is noted in the general introduction of this report that attention should be called to the fact that Mr. William E. Wallace resigned

as Labor Commissioner September 15, 1917, and that the present commissioner did not assume control of the office until December 1, 1917. In this connection it is fitting that there should be recorded in the pages of this report the well-deserved commendation due Mr. Wallace for the untiring energy with which he conducted the affairs of the office. He was appointed commissioner on March 29, 1915, and during the two and one-half years which he served the State he organized and developed the work of the commission to the broadest scope possible under the present appropriation limitations, and as the first commissioner of the department he compiled and had printed in pamphlet form the labor laws of the State, in addition to issuing the First Biennial Report of the Labor Commission for the years 1915-16.

Summary of Work Reported

In order to understand fully the details of the work of the Labor Commission it is necessary, of course, to study the entire report, but for the purpose of giving the interested reader a brief summary—a little more descriptive than a mere index—of the work actually accomplished during the past two years, this chapter is written. It gives a condensed review of the contents of each part and outlines the general composition and method of presenting the report, which has been divided into eight distinct parts, a recapitulation of which follows:

PART I. *Labor Organizations*—Under this part is given a complete directory of the labor organizations in the State of Nevada containing the name, number, and location of each local union, and the names and addresses of their respective presidents and secretaries. Tables are also presented giving statistical information relative to organization, membership and growth of the labor movement in Nevada.

PART II. *Wages and Hours of Labor*—Extensive statistics are here given showing the wages paid and the hours worked per day in the various industries of Nevada. The several industries investigated have been grouped or classified into ten principal divisions, as follows:

- Farming and stockraising.
- Mines, quarries and wells.
- Manufacturing industries.
- Railroads.
- Trades and merchandise.
- Public service.
- Professional service.
- Hotels, cafes, saloons, and laundries.
- Telegraph and telephones.
- Transfers, garages and stables.

Under this caption is also given statistical data relative to nationality and sex of persons employed in each of the above industries. The tables are so arranged that they show the details for each county as well as for the State as a whole.

PART III. *Employment of Women*—Statistics are given showing the number of women employed in the various industries of the State, amount of wages and hours worked per day. The tables used give a classification by industries, by counties, by occupations, and by ages

opportunity for a comprehensive study of wages paid to this State.

Labor Legislation in Nevada—This part consists of a complete labor laws which were introduced in the Twenty-eighth Legislature of Nevada in the year 1917. The method of showing where the bill originated, its original Senate or Assembly number, subject-matter of the bill introduced, attitude of Senate and Assembly action, and chapter number in the laws, if enacted. The laws are subdivided under 14 general headings, thereby made readily accessible for study and comparison: (1) to show the recommendations of the Governor on matters referred to him or as contained in his message to the legislature; the opinions of the Attorney-General concerning labor laws; and the decisions of the Supreme Court affecting labor.

Mediation and Conciliation in Labor Disputes—Under this heading is given a review of the work accomplished through mediation and conciliation in the various cases which have been referred by the parties to this department, and the activities of the past year in this department provide a basis upon which this feature of public service is demonstrated, as well as plainly demonstrating the desirability of continuing and expanding this method of adjusting labor disturbances.

Enforcement of Labor Laws—A synopsis of all complaints received by the department, showing the names of the parties involved, the facts of the dispute and the final disposition of same is listed in this study furnishes some good examples of a very common type of violation which is imposed upon wage-earners and establishes conclusively the necessity of rendering further and more speedy assistance to persons who experience trouble in making collection of wages they have earned.

Miscellaneous Investigations and Reports—A report of investigations made in various lines of activities having to do with labor is given. The subjects treated are: 1, cost of living; 2, rent bureaus; 3, Chinese and Japanese labor; 4, prison labor; 5, hospitals.

I. Recommendations Concerning Labor Laws—A brief summary of the legislation which is essential to the welfare of wage-earners which is needed for the proper and effective administration of the Department is presented under this caption, the same being based upon the experience of the past and in conformity with the suggestions and ideas already adopted by the progressive commonwealths.

Summary of Expenditures

Appropriations for the Labor Commission for the two-year period ending June 30, 1919, was made in a lump sum amounting to \$5,000, from which it is required that "all salaries and expenses" enumerated in the budget be paid. The salary of the Labor Commissioner is \$600 per year, the employment of one stenographer represents an outlay of \$1,200 per year, the total of which for a space of two years consumes a balance of \$700 per year for the support of the com-

mission. However, during the past two years two incidents occurred which resulted in a slight saving on the salary items; a vacancy in the office of the commissioner during the year 1917 for two and one-half months, and the absence of stenographic help for one month in 1918 made the sum of \$225 available as extra support for the commissioner.

The balance thus available for conducting the affairs was \$1,625.00 which amount was expended as economically as possible and allocated as follows:

Office fixtures.....	\$37.2
Office supplies.....	92.2
Postage.....	364.3
Express.....	10.7
Paper.....	191.9
Telephones.....	103.7
Telegrams.....	50.8
Railroad fares.....	270.0
Traveling expenses.....	268.6
Extra stenographic services.....	11.0
Available for December expenses.....	224.4
Total	\$1,625.0

In Conclusion

The preparation of this report has involved much correspondence, detail work, particularly with respect to the statistical data, all of which has been collected and compiled since the present commissioner entered the office a little more than one year ago. This work has been greatly handicapped by the limited appropriations allowed for the department and the expansion of the duties falling upon the commissioner, who under present conditions is required to do much of the detail and routine work of systematizing, tabulating, copying, and collecting of the items from which the final tables are prepared.

Early in the year 1918 steps were taken to secure individual reports from the employers of labor within the State, covering the question of wages, hours of labor, etc., and the final compilation of the statistical tables was only made possible by uncompensated overtime work of the office force and gratuitous aid of outside workers. The result has been most gratifying and despite the handicaps above mentioned an extensive field has been covered and the conclusions reached by the mathematical tabulations are interesting and in some cases surprising.

That a Labor Commission is a public necessity for the protection of the rights of men and women who toil can no longer be questioned. The only question is to provide adequate legislation to carry on and extend its usefulness. Such a commission must be maintained on a high level and there must be developed in the minds of the people a regard and respect for all the labor laws, and this condition can only be maintained by a whole-hearted application of justice and a broad dissemination of truth with respect to every activity which is undertaken.

During the brief period of occupancy of this office by the present commissioner a special effort has been made to study the industrial problems arising in this State and of the experiences which have been recorded by those in other States with a view of presenting to the Governor and the legislature and the people of Nevada a comprehensive

present conditions in order that a proper remedy may be
ever it is deemed advisable. This is in reality the most
work which falls to the head of any department, and upon a
ment of this duty rests very largely the progress of any
n the State Government.

ved that a careful reading of the pages which follow will
nd of valuable information for those who are interested in
l problems of the day, all of which is herewith respectfully

A handwritten signature in black ink, appearing to read "Robert H. Kane". The signature is fluid and cursive, with a long horizontal stroke at the end.

Labor Commissioner.

PART I

CTORY OF LABOR ORGANIZATIONS
IN NEVADA

1918



DIRECTORY OF LABOR ORGANIZATIONS

SCOPE OF THE REPORT

Organizations are among the subjects to be investigated by the Commissioner, and the particular portion of the law relating to them is that there shall be reported "a description of the different labor organizations within the State, their objects, purposes, and accomplishments, as near as may be." In this connection it is to be noted that complete statistics regarding organized labor have never before been assembled either by government or by the organizations concerned, and consequently the full influence of organized labor in this State is not known to the public or even to the unions themselves.

To secure information of the character described in the law was essential, of course, to learn the name and location of all unions in Nevada. A schedule was sent to each of the national and international organizations with headquarters in the State, requesting a list of their local unions located in Nevada, and upon receipt of this data a specially prepared schedule was sent to each local union in the State for the purpose of ascertaining the name and address of the presidents and secretaries, date of organization, membership, wages, hours of labor, object of organization, and accomplishments.

Of the above research there is herewith presented a summary of the labor unions in Nevada, which, as indicated, is the first compilation of this character ever made for the State. It is subdivided into four general divisions, showing:

1. National and international organizations having one or more affiliated local unions located in the State of Nevada.

2. State, county, and city trade councils, composed of delegates from local unions within a particular trade, or within a geographical district.

3. Directory of local unions, composed of wage-earners in a particular locality directly associated with a national or international organization.

4. Statistics showing the number of local unions in the different industries, their membership, and other data such as strikes with employers, strikes in 1917-18, and wages per

Objects and Purposes of Union Labor

The writer feels that it is impossible to present, in the limited space available, anything that would approach a complete essay on the objects, purposes, and accomplishments of organized labor. Yet this is an important thing which the Governor, the legislature, and the people of Nevada should know and in which they are vitally interested. There have been written on this subject and the theme not yet exhausted by Preambles, declarations, and resolutions by the unions, and expressions of an exalted idealism toward which they are striving. There are numerous, and their most ardent admirers contend that

a complete exhibit of the objects, purposes, and accomplishments of organized labor, when correctly and impartially recorded, will redound to the credit and benefit of the working class. On the other hand, much may be heard and read that is far from idealistic, but from some quarters there comes a hatred for the union man; a number of writers and employers denounce all forms of unionism as destructive to individual effort and advancement and as an unwise force manifesting itself in the form of strikes and boycotts.

The most generally accepted view, pronounced almost universally by broad and liberal-minded men, is that the labor movement is a systematic organized struggle of the masses to gain a richer existence for the toilers in order that they may develop their minds, bodies and souls and live the lives of men. Labor unions are everywhere recognized as the most powerful associated movement by which the standards of living are to be raised and maintained, and are regarded as a necessary balance to the great power and influence already manifested by the organizations of employers in every line of industry. Recent action by the labor unions in this country during the great world war while they have cooperated with the Government to the fullest extent in an emergency that has arisen has gone far toward eliminating the vestige of opposition to their continued existence.

Getting away from the idealistic and theoretical opinions, a review of the actual practices of labor organizations as they exist in this State will best permit each reader to draw his own conclusions. This is not an easy task. It is doubtful if any brief description of the various lines of activity can be made that will be satisfactory. There is no blanket description that will cover the broad field of labor action and the writer is forced to choose the few purposes and accomplishments which appear to be common to all unions.

Fraternalism—The early organization of labor unions adopted as a part of their laws and regulations a spirit of fraternalism, and this feature has been steadfastly maintained. The word "brotherhood" is found in many of the titles used to describe the organization, and the few exceptions the spoken and written salutation is invariably "brother" or "comrade."

Insurance Policies—Practically all of the large national and international organizations now issue insurance policies covering death benefits, and the local unions are utilized for the collection of assessments which permits of a very low rate of insurance. This activity of the labor union has a two-fold advantage: (1) It furnishes a low rate of insurance and provides for the families of unfortunate members. It provides substantial ties which hold the membership, which is highly essential to the making of strong unions.

Sick and Accident Benefits—In a large number of cases the organizations have extended their usefulness by taking care of disabled members both permanent and temporary, and upon the payment of a nominal fee, in most instances far less than the rate of old-line companies. Members are protected and paid benefits while unable to work. Closely associated with this form of paternalism is the building and maintenance of homes for the aged and disabled, which several organizations have undertaken successfully.

Trade Agreements—No list of important and common activities

ould be complete without reference to trade agreements. y a policy and reveal a purpose that extends below the sur- es down to the very fundamentals of unionism. They are s labor contracts, agreements, schedules, etc., and embody t of the trade or industrial union spirit. These contracts results of the direct negotiations between the employers loyees; they cover generally the wages, hours of service, ns of employment, and usually made for a definite period at the trade agreement is the best instrument for securing ing industrial harmony is accepted by both employers and

isilation—Cooperation on the part of labor unions in secur- n favorable to wage-earners has probably developed to a r degree than any other activity. The large number of force for the benefit and protection of the wage-earners is o the persistency of union lobbyists and union members of bodies. Any attempt to list the laws falling into this group ry, but foremost among them is establishment of labor iting the hours of work, child-labor laws, prompt payment imum wage laws for women and workmen's compensation. not confined alone to the passing of favorable legislation, s actively pursued in opposition to those bills which are against the interests of labor. The only influence which sts are able to wield is that of reason and argument; in a clear distinction between the lobbyists of employers and who were oftentimes suspected of spending large sums of

Activity—Labor unions rarely ever ally themselves with the other; on the other hand, they are prone to free them- party ties. The methods most usually adopted are directed viduals and efforts are not unfrequently made to defeat ave been hostile or indifferent to the demands of labor. opments tend to show that labor is content to confine itself of political activity for the present, but the ultimate forma- or party is not to be overlooked in any practical reckoning.

History and Growth of Unionism in Nevada

etch in brief the history of organized labor in Nevada is a without a larger amount of authentic material than is the writer. It is certain, however, that the early days of y constituted the awakening period and some of the local ed in the early sixties on the historic Comstock Lode are ence. The Gold Hill Miners' Union was organized on 1866, the Virginia City Miners' Union on July 4, 1867, the Miners' Union on March 14, 1874, and the Storey County Union on March 7, 1878. These four local unions have ntinuous and active existence and are now affiliated with onal Union of Mine, Mill and Smelter Workers of America. ments were effected by these local unions early in their s a result workers on the Comstock Lode were for many ghest paid mine workers in the western country. Closely ith this period and probably organized as a result of the yspaper business of Carson City and Virginia City in the

early days, the Washoe Typographical Union came into existence on June 28, 1863, and therefore bears the distinction of being the oldest local union in the State of Nevada.

The second period of organization seems to have followed the advent of railroads into the State. The Central Pacific was completed in 1869 and two years later Truckee Division No. 158 of the Brotherhood of Locomotive Engineers was formed; this appears to have been followed by Truckee Lodge No. 19 of the Brotherhood of Locomotive Firemen, organized in the year 1880. These railroad unions were supplemented later by the Order of Railway Conductors and the Brotherhood of Railroad Trainmen.

From 1900 to 1907 the Western Federation of Miners enjoyed a prosperous period and many locals were located in the various mining towns of the State, but with the advent of the I. W. W. agitators the most powerful locals were involved in strikes and a steady decline soon disorganized all of the mine-workers except those who held membership in the locals which were located on the Comstock.

A gradual growth among railroad and trade-workers seems to have been maintained at all times, with the exception of the period following the strike of the allied shopmen on the Harriman lines of railway in the year 1911. This strike was lost and about eight locals in this State went out of existence for a time.

The most recent and the most notable advances made in the number of local unions organized in Nevada has been during the past three years, during which time no less than 22 new locals were organized among the railroad shopmen, the mining industry, and the building trades. At the present time there are 72 local unions in the State having affiliations with 29 different national or international bodies. The membership in the State has reached a high watermark of 4,284, which is approximately 13 per cent of all wage-earners in the State. While this percentage is not large it represents something near the average for the nation.

In Conclusion

Owing to the fact that some of the data in connection with these locals were collected early in the year 1918, a few changes in the personnel of officers have no doubt occurred, and those who may wish to communicate with these locals would probably secure better results by addressing the local union itself, omitting the name of the officer entirely.

The Labor Commissioner wishes to express his thanks for the splendid spirit of cooperation displayed by all of the local unions in making prompt and complete returns of the schedules which were distributed.

1. National and International Organizations

In this division appears the names of organizations having one or more local unions in Nevada. The name of the organization is given first, followed by the name and address of the general officers. Organizations not affiliated with the American Federation of Labor are indicated by an asterisk(*).

American Federation of Labor.

Samuel Gompers, Pres.; Frank Morrison, Sec.; A. F. L. Bldg., Washington, D. C.

Bakery and Confectionery Workers International Union of America.

Charles Iffland, Sec., 212 Bush Temple of Music, Chicago, Ill.

Barbers International Union of America, Journeymen.

Jacob Fischer, Gen. S. T., 222 East Michigan Street, Indianapolis, Ind.

Blacksmiths and Helpers, International Brotherhood of.

William F. Kramer, Gen. S. T., 1234-1235 Transportation Bldg., 608 S. Dearborn St., Chicago, Ill.

Boilermakers, Iron Ship Builders and Helpers of America, International Brotherhood of.

Frank P. Rehnemeyer, S. T., 6-12 Law Bldg., Kansas City, Kans.

Brewery and Soft Drink Workers of America, International Union of the United.

John Rader, Sec., 2347-51 Vine Street, Cincinnati, Ohio.

Bricklayers, Masons, and Plasterers International Union of America.

William Dobson, Sec., University Park Bldg., Indianapolis, Ind.

Carpenters and Joiners, Amalgamated Society of.

Harry Porter, Sec., 76 Bible House, New York, N. Y.

Cigar Makers, International Union of America.

George W. Perkins, Int. Pres., 940 Monon Bldg., Chicago, Ill.

Electrical Workers, International Brotherhood of.

Charles P. Ford, Int. Sec., 406-418 Reisch Bldg., Springfield, Ill.

Engineers, International Union of Steam and Operative.

James G. Hannahan, Gen. S. T., 6334 Yale Ave., Chicago, Ill.

Hod Carriers, Building and Common Laborers Union of America.

A. Persion, Gen. S. T., Box 597, Albany, N. Y.

Hotel and Restaurant Employees International Alliance and Bartenders International League of America.

Jere L. Sullivan, S. T., Commercial Tribune Bldg., Cincinnati, Ohio.

**Locomotive Engineers, Brotherhood of.*

William B. Printer, F. G. E., 118 B. L. E. Bldg., Cleveland, Ohio.

**Locomotive Firemen and Enginemen, Brotherhood of.*

A. H. Hawley, Gen. S. T., Guardian Bldg., Cleveland, Ohio.

Machinist, International Association of.

E. C. Davison, S. T., A. F. L. Bldg., Washington, D. C.

Meat Cutters and Butcher Workmen of North America, Amalgamated.

Dennis Lane, S. T., 166 West Washington St., Chicago, Ill.

Metal Workers International Alliance, Amalgamated Sheet.

John E. Bray, Gen. S. T., 407 Nelson Bldg., Kansas City, Mo.

Mine, Mill, and Smelter Workers, International Union of.

Ernest Mills, S. T., 503-511 Denham Bldg., Denver, Colo.

Musicians, American Federation of.

Owen Miller, Sec., 3535 Pine Street, St. Louis, Mo.

Painters, Decorators and Paperhangers of America, Brotherhood of.

J. C. Skemp, Gen. S. T., Drawer 99, Lafayette, Ind.

Plasterers International Association of the United States and Canada, Operative.

T. A. Scully, S. T., 442 East 2nd Street, Middletown, Ohio.

Plumbers and Steam Fitters of the United States and Canada, United Association of.

Thomas E. Burke, Gen. S. T., 411-414 Bush Temple of Music, Chicago, Ill.

Printing Pressmen and Assistants Union of North America, International.

Joseph C. Orr, S. T., Pressman's Home, Tennessee.

Railroad Telegraphers, The Order of.

C. B. Rawlins, Grand S. T., Star Bldg., St. Louis, Mo.

**Railroad Trainmen, Brotherhood of.*

A. E. King, Gen. S. T., American Trust Bldg., Cleveland, Ohio.

Railway Carmen of America, Brotherhood of.

E. William Weeks, Grand S. T., 506 Hall Bldg., Kansas City, Mo.

**Railway Conductors of America, Order of.*

C. E. Whitney, Grand Sec., Cedar Rapids, Iowa.

Theatrical Stage Employees and Moving Picture Machine Operators United States and Canada, International Alliance of.

Charles Crickmore, Asst. Pres., 107 W. 46th St., New York, N. Y.

Typographical Union, International.

J. W. Hays, S. T., 640-650, Newton Claypool Bldg., Indianapolis, Ind.

2. State, County, and City Trade Councils

In this division appears the names of leagues and councils composed of delegates from local unions within a particular trade, or within a definite district.

Liberty Labor League of Nevada.

John R. Bruce, Chairman, Virginia City, Nevada. John W. Brooks, Sec., N. Virginia St., Reno, Nevada.

State Legislative Board, B. of R. T.

C. W. Blackwell, Chairman, Sparks, Nevada. E. H. Thompson, Sec., Post St., Salt Lake, Utah.

State Legislative Board, B. L. F. & E.

F. W. Ingram, Chairman, Sparks, Nevada. Lou Martin, Sec., Box 2, Vegas, Nevada.

Joint Legislative Board, Washoe County.

John W. Brooks, Chairman, 212 N. Virginia St., Reno, Nevada. George James, Sec., 212 N. Virginia St., Reno, Nevada.

Washoe County Building Trades Council.

L. C. Swartz, Pres., 1841 "F" St., Sparks, Nevada. H. R. Landis, Saturno Hotel, Reno, Nevada.

Reno Central Trades and Labor Council.

Ralph Dent, Pres., Manning Hotel, Reno, Nevada. H. C. Douglas, Sec., N. Virginia St., Reno, Nevada.

White Pine County Central Labor Union.

S. L. Edgeley, Pres., Ely, Nevada. Jack Blake, Sec., Ely, Nevada.

General Workmen's Committee, Smelter Department.

V. W. Gould, Chairman, Box 195, Ely, Nevada. C. E. Wickberg, Sec., Nevada.

General Workmen's Committee, Mining Department.

M. C. Brian, Chairman, Ruth, Nevada. Thos. Dixon, Sec., Ruth, Nevada.

3. Directory of Local Unions in Nevada

In this division appears a list of the local unions in Nevada, arranged alphabetically by towns. In each case the presiding officer is listed as "President" and the officer who conducts correspondence is designated by the single title "Secretary." Where a special address is not given for the President or Secretary, he may be addressed at the town to which the local is located.

CARSON CITY

Typographical No. 65.

Dean K. Smith, Pres. H. P. Gifford, Sec.

EAST ELY

Locomotive Engineers No. 810.

A. E. Hartman, Pres. J. W. Painter, Sec.

Locomotive Firemen No. 799.

Henry Cornell, Pres., Box 205. G. F. Deckelman, Sec., Box 159.

Railroad Trainmen No. 678.

E. O. Harned, Pres. W. W. Paterson, Sec.

Railway Conductors No. 640.

A. B. Bonham, Pres., Box 147. A. S. Barnes, Sec.

ELKO

Engineers No. 794.

, Pres. K. W. Muhl, Sec., Box 473.

Women No. 792.

, Pres. C. O. Coats, Sec., Box 386.

ELY

No. 310.

n, Pres. H. Tamblyn, Sec., Box 255.

No. 490.

res., East Ely. C. E. Laking, Sec., McGill.

No. 4.

Pres., McGill. T. J. Rees, Sec., Box 283, McGill.

No. 1326.

Pres. R. A. Balrd, Sec., Box 454.

No. 132.

Pres., Box 264. Gus Grail, Sec., Box 264.

No. 279.

res., Box 786. A. E. Francis, Sec., East Ely.

No. 212.

Pres. R. A. Fletcher, Sec., Box 818.

No. 46.

ay, Pres. G. E. Somerby, Sec., Box 105.

No. 506.

rd, Pres. H. C. Reilly, Sec., Box 333.

GOLD HILL

Smelter No. 54.

a, Pres. W. J. Stack, Sec., Box 115.

GOLDFIELD

No. 1761.

er, Pres. J. J. Joyner Sec., Box 649.

No. 105.

er, Pres. W. F. Richardson, Sec., Box 1361.

LAS VEGAS

No. 438.

rk, Pres. John D. Kramer, Sec.

No. 555.

r, Pres., Box 279. R. W. Gorton, Sec., Box 279.

Engineers No. 766.

Pres., Box 214. Chas. Ireland, Sec., Box 209.

Women No. 749.

n, Pres., Box 160. Lou Martin, Sec., Box 280.

No. 617.

iver, Pres. F. P. Temple, Sec., Box 126.

Women No. 781.

res. J. A. Becwar, Sec., Box 332.

Doctors No. 520.

ern, Pres., Box 275. Chas. O. Snyder, Sec.

Men No. 1071.

ppner, Pres. Roy Goodwin, Sec.

McGILL

No. 1572.

ond, Pres. Albert Jenkins, Sec., Box 57.

Smelter No. 233.

, Pres., Ely. V. W. Gould, Sec., Box 195, Ely.

Plumbers No. 611.

J. T. Manning, Pres., Ely. F. W. Case, Sec., Box 287.

RENO

Bakers No. 161.

Fred Ross, Pres., 667 Chestnut St. J. A. Diener, Sec., 436 W. 6th. St.

Barbers No. 600.

A. E. Grijalva, Pres., 425 Chestnut St. F. M. Pierson, Sec., 112 N. Virginia St.

Brewery Workers No. 352.

Ed. Hood, Pres., care Reno Brew. Co. E. Corecco, Sec., Box 173.

Bricklayers No. 1.

Sidney Prouty, Pres. John Johnson, Sec., Box 7.

Carpenters No. 971.

J. W. Brooks, Pres., 212 N. Virginia St. G. M. Gray, Sec., 1401 N. Virginia St.

Cigar Makers No. 307.

L. A. Croonquist, Pres., 244½ West St. J. L. Cochran, Sec., 244½ West St.

Electrical Workers No. 401.

B. S. Cole, Pres. Geo. I. James, Sec., 919 Jones St.

Hod Carriers No. 169.

J. Silvia, Pres., 627 Vine St. J. McCabe, Sec., Box 151.

Meat Cutters No. 648.

E. S. Fontaine, Pres., 950 S. Virginia St. C. E. Catotr, Sec., Box 471.

Musicians No. 368.

J. F. Butler, Pres., 619 Sinclair St. C. F. Loring, Sec., 16 Thoma St.

Painters No. 567.

H. R. Landis, Pres., Saturno Hotel. G. H. Booth, Sec., Box 52.

Plasterers No. 241.

C. F. Morse, Pres., Box 242. V. Mecum, Sec., 614 Elko Avenue.

Plumbers No. 350.

Lee Cook, Pres., 68 Keystone Avenue. J. V. McCormick, Sec., Box 400.

Printing Pressmen No. 222.

Ralph Dent, Pres., Box 682. Frank J. Rivers, Sec., Box 415.

Theatrical Stage Employees No. 363.

Chas. W. Clark, Pres. Sol J. Lachman, Sec., Box 511.

Typographical No. 611.

Geo. F. Smith, Pres., 1015 Jones St. Wm. D. McNair, Sec., Box 251.

SILVER CITY

Mine, Mill and Smelter No. 92.

S. G. Boston, Pres. L. L. Foote, Sec., Box 76.

SPARKS

Blacksmiths No. 365.

J. M. Sullivan, Pres., 729 N. Center St., Reno. A. L. Church, Sec.

Boilermakers No. 339.

T. Dougherty, Pres., 325 E. Liberty St., Reno. S. Carranno, Sec., Box 91.

Locomotive Engineers No. 158.

J. W. Swaney, Pres. Chas. E. Gates, Sec.

Locomotive Firemen No. 19.

R. W. Steele, Pres. J. S. Cottrell, Sec., Box 507.

Machinist No. 705.

Frank Cantlon, Pres. V. Whitlock, Sec.

Metal Workers No. 588.

J. S. James, Pres. Dave Elkins, Sec.

Railroad Trainmen No. 726.

F. W. Burhans, Pres., Reno. C. H. Conerty, Sec., Box 432.

Railway Conductors No. 94.

W. J. May, Pres. Frank Hart, Sec., Box 359.

Railway Carmen No. 1001.

E. A. Nelson, Pres. George Eib, Sec., Box 417.

THOMPSON

Smelter No. 235.

Pres. Frank H. Wilson, Sec.

TONOPAH

Pres., Box 511. Frank O. Arthur, Sec., Box 511.

293.

Pres. A. J. McIver, Sec., Box 295.

417.

Pres., Box 221. E. W. Lawson, Sec., Box 668.

ers No. 361.

Pres., Box 908. Walter W. Ross, Sec., Box 908.

ative No. 623.

es., Box 35. Stuart MacDonald, Sec., Box 1031.

88.

Pres., Box 567. Wm. Davist, Sec., Box 68.

26.

ng. Pres., Box 485. J. S. McGinn, Sec., Box 145.

o. 616.

Pres. W. W. Pittsche, Sec., care Times.

VIRGINIA CITY

Smelter No. 46.

ng. Pres. John R. Bruce, Sec., Box 1.

Smelter No. 53.

Pres. H. J. Gallagher, Sec.

WINNEMUCCA

482.

l. Pres. W. S. Duncan, Sec.

en No. 313.

Pres. B. F. Rosa, Sec., Box 343.

tors No. 581.

Pres., Box 34. G. E. Usher, Sec., 861 E. 8th South, Salt Lake

MEMBER AND MEMBERSHIP OF LOCAL UNIONS IN NEVADA CLASSIFIED BY TOWNS

Towns	Number Unions 1916	Number Unions 1918	Membership 1916	Membership 1918
-----	1	1	-----	35
-----	4	4	-----	290
-----	2	2	-----	77
-----	7	9	-----	378
-----	1	1	-----	17
-----	3	2	-----	18
-----	4	8	-----	312
-----	2	3	-----	625
-----	15	16	-----	641
-----	1	1	-----	12
-----	4	9	-----	884
-----	0	1	-----	99
-----	7	8	-----	287
-----	2	2	-----	243
-----	3	3	-----	125
-----	3	3	-----	241
-----	59	73	-----	4284

Railroad Telegraphers maintain one local union on each line of railway, with headquarters in the larger cities. Local No. 53 at San Francisco extends its jurisdiction over the Western Railroad, Local No. 111 at Los Angeles extends its jurisdiction over the Los Angeles Railroad, and Local 153, Oakland, extends its jurisdiction over the Western Railroad. The membership above given cover only such men as are employed in the

TABLE 2. DATE OF ORGANIZATION OF LOCAL UNIONS IN NEVADA.
IN CHRONOLOGICAL ORDER

Local No.	Trade represented	Date organized	Located at	Death benefits
65	Typographical	June 28, 1863	Carson City	Yes
54	Mines and mills	Dec. 8, 1866	Gold Hill	No
46	Mines and mills	July 4, 1867	Virginia City	No
168	Locomotive engineers	1871	Sparks	Yes
92	Mines and mills	Mar. 14, 1874	Silver City	No
53	Mine mechanics	Mar. 7, 1878	Virginia City	No
19	Locomotive firemen	July 30, 1880	Sparks	Yes
313	Railroad trainmen	1892	Winnemucca	Yes
567	Painters	Feb. 28, 1902	Reno	No
1	Bricklayers	Apr. 1902	Reno	No
971	Carpenters	May 1902	Reno	No
611	Typographical	Dec. 18, 1903	Reno	Yes
362	Brewery workers	1903	Reno	No
1417	Carpenters	Nov. 14, 1904	Tonopah	No
361	Electricians	1904	Tonopah	No
1761	Carpenters	1904	Goldfield	No
401	Electricians	Jan. 19, 1905	Reno	No
726	Railroad trainmen	Feb. 28, 1905	Sparks	Yes
161	Bakers	Mar. 21, 1905	Reno	No
638	Machinists	Aug. 18, 1905	Tonopah	No
426	Musicians	Oct. 9, 1905	Tonopah	No
241	Plasterers	Dec. 26, 1905	Reno	No
105	Typographical	1905	Goldfield	Yes
1350	Plumbers	Oct. 24, 1906	Reno	No
486	Painters	Dec. 5, 1906	Ely	No
4	Bricklayers	June 3, 1907	Ely	No
506	Typographical	June 12, 1907	Ely	Yes
581	Railway conductors	1907	Winnemucca	Yes
470	Barbers	1907	Tonopah	No
600	Barbers	Oct. 30, 1907	Reno	No
520	Railway conductors	Dec. 29, 1907	Las Vegas	Yes
1826	Carpenters	1907	Ely	No
749	Locomotive firemen	July 12, 1908	Las Vegas	Yes
766	Locomotive engineers	Oct. 28, 1908	Las Vegas	Yes
222	Pressmen	Apr. 1909	Reno	No
368	Musicians	Nov. 13, 1909	Reno	No
94	Railway conductors	Nov. 1909	Sparks	Yes
279	Machinists	1909	Ely	No
792	Locomotive firemen	Apr. 27, 1910	Elko	Yes
794	Locomotive engineers	May 22, 1910	Elko	Yes
799	Locomotive firemen	July 1910	East Ely	Yes
212	Musicians	Aug. 10, 1910	Ely	No
1572	Carpenters	1910	McGill	No
169	Hod carriers	May 11, 1911	Reno	No
1482	Carpenters	Dec. 1912	Winnemucca	No
363	Stage employees	Oct. 12, 1914	Reno	No
781	Railroad trainmen	Dec. 11, 1914	Las Vegas	Yes
616	Typographical	July 1915	Tonopah	Yes
810	Locomotive engineers	Jan. 20, 1916	East Ely	Yes
611	Plumbers	Feb. 17, 1916	McGill	No
490	Boilermakers	Feb. 28, 1916	Ely	No
640	Railway conductors	May 1916	East Ely	Yes
307	Cigar makers	May 1916	Reno	No
678	Railroad trainmen	Aug. 1916	East Ely	Yes
293	Blacksmiths	Dec. 1, 1916	Tonopah	No
705	Machinists	Dec. 14, 1916	Sparks	No
623	Operative engineers	Mar. 1, 1917	Tonopah	No
310	Blacksmiths	Mar. 10, 1917	Ely	No
132	Cooks and waiters	Aug. 1917	Ely	No
648	Meat cutters	Nov. 21, 1917	Reno	No

DATE OF ORGANIZATION OF LOCAL UNIONS—Continued.

Local No.	Trade represented	Date organized	Located at	Death benefits
226	Mines and mills	July 14, 1918	Thompson	No
617	Metal workers	Aug. 22, 1918	Las Vegas	No
565	Boilermakers	Aug. 27, 1918	Las Vegas	Yes
428	Blacksmiths	Sept. 4, 1918	Las Vegas	No
1971	Railway carmen	1918	Las Vegas	No
223	Mines and mills	1918	McGill	No
1001	Railway carmen	1918	Sparks	No
589	Metal workers	1918	Sparks	No
365	Blacksmiths	1918	Sparks	No
339	Boilermakers	1918	Sparks	No

PART II

WAGES AND HOURS OF LABOR IN NEVADA

1918

STATISTICS ON WAGES AND HOURS OF LABOR

THE VALUE OF STATISTICS

the and usefulness of wage statistics have never been questioned by the student or by the thinking man who is in any way interested in the solution of the industrial problems of today. Modern progressive commonwealths realize to the full extent that statistical analysis is an indispensable aid in the study of social problems. The underlying object of every person engaged in the work or in the duty of collecting statistics should be to assemble all the information attainable concerning the activities coming within the scope of the survey and to present them in such a fashion that proper conclusions may be reached. If unwarranted deductions are made from the figures given, it is not the fault of the figures; the statistics must be properly interpreted, and there is an increasingly large volume of statistics which they are being properly understood and employed.

Statistics on wages and hours of labor furnish lasting achievements which are found essential for the further development of knowledge and for the future fixing of compensation for wage-earners. Any attempt at a fair and equitable adjustment of wage disputes must of necessity have some basis and one of the most important fundamentals is to accurately determine the amount of wages paid in the past and present in various occupations and industries, as well as the conditions under which the workers are employed. The wage mediator, who is fast coming into prominence, and the legislators find that it is the disposition of the employer and the employee to exaggerate the true conditions of "average" wages and hours of labor. Few men really know the value of statistics in its absence cannot approach a fair solution in a conciliatory way which fact oftentimes leads to disagreement and final industrial action.

There exists no other testimony as to the value of statistics than the fact that it is impossible to suppress a righteous demand in countries where the people are fully informed concerning every phase of industrial activity, capable of being expressed in figures, the expense of collecting the data would be amply justified. Armed with such information the humblest citizen may win in the tribunals of equity even when opposed by the most powerful oppressors. Where these statistics cannot be obtained, as in China today, or in Europe during the Dark Ages, social and industrial progress is arrested and all the evils of such an arrestment are experienced.

The proper agency for the collection of statistics relating to labor is the Labor Commission of the State, indeed it is the explicit duty of such department to furnish data on all labor problems, especially the question of daily wages and hours of labor is highly important. When such information is collected it is a foregone conclusion that it should be published in public documents for the knowledge and use of all.

Method and Scope of Statistics Collected

The data and information contained herein were obtained for the year 1917 by submitting a schedule of inquiry by mail to all of the employers of labor whose names and addresses could be secured by the Labor Commissioner in the short time at his disposal. Under date of January 15, 1918, printed schedules were mailed to all persons known or believed to be employers of labor, and collection of these reports was continued until practically all of the persons addressed had submitted replies. As may be surmised, the collection of these reports involved much correspondence.

The schedule of inquiry called for the following information, viz.: (1) Name of employee; (2) Sex; (3) Age; (4) Nationality or color; (5) Address; (6) Occupation; (7) Wages per day; (8) Hours worked per day; (9) Amount of pay-check for November, 1917; and (10) Days worked per annum. There was also included inquiries relative to organization and extent of business, calling for date business was organized, and the highest, lowest, and average number of employees in service during the year 1917.

On account of limited office force and appropriations it was necessary to use one form of schedules, fitted as nearly as possible to accommodate all of the various industries. It may readily be seen that this method of collecting data is far from perfect and involves in some cases additional labor on the part of those who fill in the schedules, as well as a very careful editing by the office force. For example: The seventh column, entitled "Wages per day," was obviously not suited for the transportation employee who is paid by the mile, or the mechanic who is compensated for piece work, or for the recording of weekly or monthly rates of pay. However, most of those who filled in the schedules were careful and thoughtful enough to reduce the wage paid to a "rate per day," and this has been supplemented by a thorough editing of each report in this office.

In order that statistics may be comparable it is very essential that they shall be based on the same general classification, and while no standard has been adopted for use by the States, an attempt has been made to meet this condition by making the classification and grouping of industries as nearly as possible along the lines used by the Federal Department of Labor. The classifications and groupings used herein are as follows:

- A. Farming and Stockraising.
- B. Mines, Mills and Quarries.
- C. Manufacturing Industries.
- D. Railroads.
- E. Trades and Merchandise.
- F. Public Service.
- G. Professional Service.
- H. Hotels, Cafes, Barbershops, Laundries, Etc.
- I. Telegraphs and Telephones.
- J. Transfers, Garages, and Stables.

Explanation for Study of Tables

In connection with each particular industry two sets of tables have been prepared. First: Tables I to X, inclusive, show the total number of firms reporting, the number of employees, together with a tabu-

ing the sex and race of the employees reported, classified by counties. These tables are followed by a summary of the State classified in Table XI by industries and in Table XII by counties. Second: Tables XIII to XXII, inclusive, show the number of firms reporting, the highest, lowest, and average number of employees in service during the year, together with a tabular subdivision of the principal occupations, the number of employees engaged in each occupation, the average daily wages, the number of hours of labor per day, and the amount of pay-check actually received during the month of November 1917. These tables are followed by a summary of the entire State in Table XXIII, which sets out in detail the average daily wages and hours of labor of all employees in the State, classified by industries.

It is borne in mind, of course, that it was impossible by means of a census to secure a full and complete list of all employees in the State, or even to secure the same percentage in a given industry in all the various counties, but it is a fair estimation to say that the statistics represented by these statistics cover fully 80 per cent of the wage-earners in the State and reflects a fair average of conditions during the period covered by this report. The reader is asked to bear in mind that the average wages presented herein are for the year 1918 as a result of war conditions.

The amount of labor involved in the collection and compilation of these statistics was much greater than at first anticipated and is far beyond the capacity of the present personnel of the Labor Commission. As indicated elsewhere in this report, the submission of statistics for the year 1918 was only made possible by overtime work of the present personnel, which consists only of the commissioner and one stenographer, and the aid of outside workers.

Special Features of the Statistics

The figures here given it is clearly apparent that the largest industry in the State, so far as the number of employees is concerned, is the mining industry, which reports a total of 11,358 employees. This industry is followed by the railroads which employ no less than 5,148 persons, and the farming and stockraising industry which is found a total of 4,486 employees. In view of the great proportion of the farm owners are themselves workers, perhaps a larger percentage than any other industry unrepresented in the data used, points to the possibility that the farming and stockraising industry furnishes employment to more persons, than the railroads. This condition, of course, applies to a more extent in the industries listed as trades and merchandise, hotels, restaurants, transfers, garages and stables. Summed up in brief it is that fully three-fourths of the wage-earners in Nevada are in the three industries, viz., mining, railroading, and farming. Elko County, which is the home of the great Nevada Consolidated Mining Company, employing more than 3,000 workers, has the largest number of wage-earners. Washoe County, which has the largest population, follows second with 4,403, while Elko, Nye, and Esmeralda are close contenders for third place, with a showing of only 2,500 wage-earners each.

A summary of the wage tables indicate that the average daily wage in Nevada is \$3.73, and that the average hours of labor is 8.7. The employees in the mining industry and those employed by the State, county, and municipal governments, enjoy the most liberal average wages, and work on the whole the smaller number of hours per day. In connection with the statistics on hours it is significant to note that these two industries—mining and public service—are the only ones which are covered in their entirety by the eight-hour laws of the State.

The low average wages paid by the railroads is a matter worthy of notice, especially in view of the fact that it is generally believed that railroad workers are paid excessive salaries. The figures gathered in this State are amply substantiated by the following excerpt from the report of the Railroad Wage Commission to the Director General of Railroads, which was written previous to the recent wage advance by the Federal Government: "It has been a somewhat popular impression that railroad employees were among the most highly paid workers. But figures gathered from the railroads themselves disposed of this belief. Fifty-one per cent of all employees during December, 1917, received \$75 per month or less, while 80 per cent received \$100 per month or less."

For those who would know more of the actual conditions under which the great majority of their fellow citizens are working, the following tables have been prepared and they bear mute evidence of the somewhat uneven benefits and burdens of those who toil in the industries of our State:

A. FARMING AND STOCKRAISING

Table 1. Number of Persons Employed, Showing Sex and Race, Classified by Counties

County	Firms report- ing	Total employees	Sex		Race				
			Males	Females	Whites	Negroes	Indians	Japanese	Chinese
Churchill	50	341	317	24	309	1	25	0	6
Clark	10	31	30	1	30	0	1	0	0
Douglas	87	364	342	22	319	2	32	3	8
Elko	177	1116	1060	66	1048	2	44	1	21
Esmeralda	3	15	15	0	13	0	2	0	0
Eureka	36	225	210	15	207	0	15	0	3
Humboldt	94	798	766	42	750	0	23	2	18
Lander	41	184	170	14	164	0	19	0	1
Lincoln	9	65	62	3	64	0	0	0	1
Lyon	74	355	332	23	315	1	38	0	1
Mineral	9	63	59	4	51	0	9	0	3
Nye	43	146	136	10	112	0	33	0	1
Ormsby	10	40	37	3	36	0	3	0	1
Storey	1	13	13	0	13	0	0	0	0
Washoe	75	473	446	27	462	0	8	1	2
White Pine	45	257	242	15	239	1	14	1	2
State totals	764	4486	4217	269	4132	7	271	8	68

B. MINES, MILLS, AND QUARRIES

Number of Persons Employed, Showing Sex and Race, Classified by Counties

	Firms report- ing	Total employees	Sex		Race				
			Males	Females	Whites	Negroes	Indians	Japanese	Chinese
.....	4	216	216	0	214	0	2	0	0
.....	39	607	592	15	595	1	0	3	8
.....	2	13	12	1	13	0	0	0	0
.....	17	317	312	5	315	0	0	0	2
.....	28	961	966	5	969	2	0	0	0
.....	8	83	83	0	80	0	0	2	1
.....	27	704	687	17	697	0	0	0	7
.....	16	231	278	3	281	0	0	0	0
.....	12	319	317	2	312	0	0	0	7
.....	20	809	795	14	804	1	1	3	0
.....	29	519	511	8	510	0	0	1	8
.....	50	1883	1874	9	1883	0	0	0	0
.....	1	9	9	0	9	0	0	0	0
.....	20	457	464	3	457	0	0	0	0
.....	14	78	72	6	77	0	0	1	0
.....	10	4102	4077	25	3994	11	0	97	0
.....	295	11368	11245	113	11200	15	3	107	33

C. MANUFACTURING INDUSTRIES

Number of Persons Employed, showing Sex and Race, Classified by Counties

	Firms report- ing	Total employees	Sex		Race				
			Males	Females	Whites	Negroes	Indians	Japanese	Chinese
.....	5	271	268	3	267	0	3	1	0
.....	3	18	18	0	18	0	0	0	0
.....	6	41	41	0	36	0	3	0	2
.....	7	83	81	2	81	1	1	1	1
.....	4	36	33	3	35	1	0	0	0
.....	1	3	3	0	2	0	0	0	1
.....	10	66	66	0	66	0	0	0	0
.....	3	7	7	0	7	0	0	0	0
.....	3	22	23	0	22	0	0	0	0
.....	4	81	81	0	81	0	0	0	0
.....	1	8	8	0	8	0	0	0	0
.....	9	80	76	4	80	0	0	0	0
.....	2	12	12	0	12	0	0	0	0
.....	1	3	3	0	3	0	0	0	0
.....	29	541	512	29	536	2	1	2	0
.....	9	51	48	3	51	0	0	0	0
.....	97	1323	1279	44	1305	4	8	3	3

D. RAILROAD LINES**Table 4. Number of Persons Employed, Showing Sex and Race, Classified by Counties**

County	Firms report- ing	Total employees	Sex		Race				
			Males	Females	Whites	Negroes	Indians	Japanese	Chinese
Churchill	1	185	183	2	122	0	0	0	63
Clark	2	878	869	6	819	16	0	40	0
Douglas	1	4	3	1	4	0	0	0	0
Elko	2	788	773	16	748	5	0	23	13
Esmeralda	3	116	114	2	115	1	0	0	0
Eureka	3	58	56	2	57	0	0	1	0
Humboldt	3	417	411	6	408	1	0	13	0
Lander	3	50	50	0	49	1	0	0	0
Lincoln	1	197	196	1	173	1	0	23	0
Lyon	3	136	125	11	185	0	0	1	0
Mineral	2	163	162	1	122	1	10	29	1
Nye	3	65	64	1	65	0	0	0	0
Ormsby	1	75	75	0	73	0	2	0	0
Storey	2	30	29	1	30	0	0	0	0
Washoe	4	1483	1451	32	1408	8	0	37	30
White Pine	1	505	498	7	371	3	0	131	0
State totals	*35	5148	5059	89	4694	37	12	296	107

*Only 14 separate railroads reported, but each county has been credited with the number of roads having employees located within the county.

E. TRADES AND MERCHANDISE**Table 5. Number of Persons Employed, Showing Sex and Race, Classified by Counties**

County	Firms report- ing	Total employees	Sex		Race				
			Males	Females	Whites	Negroes	Indians	Japanese	Chinese
Churchill	11	74	57	17	74	0	0	0	0
Clark	19	88	79	9	86	1	0	1	0
Douglas	11	27	23	4	27	0	0	0	0
Elko	28	106	80	26	105	0	0	0	1
Esmeralda	17	73	65	8	73	0	0	0	0
Eureka	5	15	12	3	14	0	0	0	1
Humboldt	25	155	129	26	150	0	0	1	4
Lander	8	28	27	1	28	0	0	0	0
Lincoln	9	26	23	3	26	0	0	0	0
Lyon	19	83	71	12	82	1	0	0	0
Mineral	8	16	16	10	15	1	0	0	0
Nye	32	130	120	10	130	0	0	0	0
Ormsby	12	34	25	9	34	0	0	0	0
Storey	11	45	42	3	43	0	2	0	0
Washoe	95	886	716	170	879	4	0	1	2
White Pine	43	261	221	40	259	0	0	2	0
State totals	351	2047	1706	341	2025	7	2	5	8

F. PUBLIC SERVICE

Number of Persons Employed, Showing Sex and Race, Classified by Counties

Firms report- Ind	Total employees	Sex		Race				
		Males	Females	Whites	Negroes	Indians	Japanese	Chinese
14	39	18	21	39	0	0	0	0
11	43	13	30	43	0	0	0	0
9	24	8	16	24	0	0	0	1
54	132	27	105	130	1	0	0	0
7	14	3	11	14	0	0	0	0
10	14	2	12	14	0	0	0	0
42	80	16	64	80	0	0	0	0
7	14	3	11	14	0	0	0	0
17	45	13	32	45	0	0	0	0
27	73	32	41	73	0	0	0	0
9	29	12	17	29	0	0	0	0
25	77	19	58	75	0	1	0	1
25	188	128	60	183	0	5	0	0
6	29	17	12	29	0	0	0	0
46	379	222	157	379	0	0	0	0
33	86	31	55	86	0	0	0	0
342	1266	564	702	1257	1	6	0	2

G. PROFESSIONAL SERVICE

Number of Persons Employed, Showing Sex and Race, Classified by Counties

Firms report- Ind	Total employees	Sex		Race				
		Males	Females	Whites	Negroes	Indians	Japanese	Chinese
1	1	0	1	1	0	0	0	0
2	2	0	2	2	0	0	0	0
0	0	0	0	0	0	0	0	0
6	9	0	9	9	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
2	2	0	2	2	0	0	0	0
0	0	0	0	0	0	0	0	0
1	1	0	1	1	0	0	0	0
1	1	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	0
3	11	4	7	10	1	0	0	0
1	2	0	2	2	0	0	0	0
0	0	0	0	0	0	0	0	0
18	24	3	21	24	0	0	0	0
3	22	11	11	15	0	0	7	0
38	75	18	57	67	1	0	7	0

H. HOTELS, CAFES, SALOONS, ETC.

Table 8. Number of Persons Employed, Showing Sex and Race, by Counties

County	Firms report- ing	Total employees	Sex		Race			
			Males	Females	Whites	Negroes	Indians	Japanese
Churchill	4	23	13	10	18	0	2	0
Clark	8	58	34	24	57	1	0	0
Douglas	9	52	30	22	42	1	1	0
Elko	13	73	62	11	57	4	1	0
Esmeralda	5	26	16	10	25	1	0	0
Eureka	2	4	3	1	3	0	0	0
Humboldt	21	122	96	36	99	11	0	0
Lander	5	15	11	4	10	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Lyon	6	20	17	3	12	0	0	0
Mineral	4	18	13	5	11	1	0	0
Nye	8	46	27	19	40	3	1	0
Ormsby	5	26	16	10	19	0	0	0
Storey	4	11	11	0	8	0	0	0
Washoe	34	259	166	94	227	13	0	0
White Pine	17	108	65	43	97	1	0	1
State totals	145	861	569	292	725	36	5	4

I. TELEGRAPH AND TELEPHONES

Table 9. Number of Persons Employed, Showing Sex and Race, by Counties

County	Firms report- ing	Total employees	Sex		Race			
			Males	Females	Whites	Negroes	Indians	Japanese
Churchill	2	13	8	5	13	0	0	0
Clark	2	7	5	2	7	0	0	0
Douglas	0	0	0	0	0	0	0	0
Elko	2	19	10	9	17	0	1	0
Esmeralda	1	8	8	0	8	0	0	0
Eureka	0	0	0	0	0	0	0	0
Humboldt	2	49	27	22	49	0	0	0
Lander	2	3	2	1	3	0	0	0
Lincoln	2	1	1	0	1	0	0	0
Lyon	2	12	7	5	12	0	0	0
Mineral	1	1	1	0	1	0	0	0
Nye	1	32	19	13	31	1	0	0
Ormsby	2	14	9	5	14	0	0	0
Storey	1	2	1	1	2	0	0	0
Washoe	3	155	95	60	155	0	0	0
White Pine	1	10	3	7	10	0	0	0
State totals	*25	326	196	130	323	1	1	0

*Only 15 separate telegraph and telephone companies reported, but each county has been given with the number of companies having employees located within the county.

J. TRANSFERS, GARAGES, AND STABLES

Number of Persons Employed, Showing Sex and Race, Classified by Counties

	Firms report- ing	Total employees	Sex		Race				
			Males	Females	Whites	Negroes	Indians	Japanese	Chinese
.....	3	20	19	1	20	0	0	0	0
.....	7	16	16	0	16	0	0	0	0
.....	1	6	6	0	6	0	0	0	0
.....	2	11	10	1	11	0	0	0	0
.....	1	6	6	0	6	0	0	0	0
.....	1	3	3	0	3	0	0	0	0
.....	5	34	33	1	33	1	0	0	0
.....	2	6	6	0	6	0	0	0	0
.....	1	4	3	1	4	0	0	0	0
.....	4	10	10	0	10	0	0	0	0
.....	6	20	20	0	20	0	0	0	0
.....	4	34	33	1	34	0	0	0	0
.....	1	4	4	0	4	0	0	0	0
.....	14	125	120	5	123	1	0	1	0
.....	7	61	58	3	59	1	0	0	1
.....	60	364	351	13	359	3	0	1	1

GRAND TOTAL FOR STATE

Number of Person Employed, Showing Sex and Race, Classified by Industries

	Firms report- ing	Total employees	Sex		Race				
			Males	Females	Whites	Negroes	Indians	Japanese	Chinese
.....	764	4486	4217	269	4132	7	271	8	68
.....	286	11858	11245	113	11200	15	3	107	33
.....	97	1823	1297	44	1306	4	8	3	3
.....	14	5148	5069	89	4694	37	12	298	107
.....	351	2047	1706	341	2025	7	2	5	8
.....	342	1266	564	702	1257	1	6	0	2
.....	38	75	18	57	67	1	0	7	0
.....	145	861	569	292	725	36	5	42	53
.....	15	326	196	130	323	1	1	1	0
.....	60	364	351	13	359	3	0	1	1
State.....	2121	27254	25204	2050	26087	112	308	472	275

GRAND TOTAL FOR STATE

Table 12. Number of Persons Employed, Showing Sex and Race, Classified by Counties

County	Firms report- ing	Total employees	Sex		Race				
			Males	Females	Whites	Negroes	Indians	Japanese	Chinese
Churchill	95	1183	1099	84	1077	1	32	3	70
Clark	103	1745	1656	89	1673	19	1	44	8
Douglas	126	581	465	66	471	3	36	4	17
Elko	306	2656	2405	250	2521	13	47	33	41
Esmeralda	67	1255	1216	39	1248	6	2	0	0
Eureka	66	406	372	33	380	0	15	3	7
Humboldt	231	2427	2211	216	2329	13	28	20	37
Lander	87	588	554	34	562	1	19	4	2
Lincoln	55	680	637	43	648	1	0	23	8
Lyon	160	4580	1470	110	1525	3	29	12	1
Mineral	69	887	802	85	767	3	19	30	18
Nye	179	2504	2372	132	2460	5	35	0	4
Ormsby	60	404	315	89	396	0	10	0	8
Storey	47	594	574	20	589	0	2	0	3
Washoe	332	4403	3802	601	4270	28	9	48	48
White Pine	169	5463	5254	209	5181	17	14	248	3
State totals	*2152	25254	25204	2060	28087	112	306	472	275

*Only 2,121 firms reported. In 31 cases of railroads and telegraph and telephone companies, credit is given each county in which employees are located.

A. FARMING AND STOCKRAISING

Table 13. Average Daily Wage and Hours of Labor of Employees, Classified by Occupations

Occupation	Number of employees	Average wages per day	Average hours per day	Average pay for Nov. 1917
Auto drivers	12	\$1.89	9.0	\$53.08
Bookkeepers	20	2.02	7.7	61.33
Cooks	303	1.65	9.9	44.81
Cowboys	205	1.76	9.6	46.20
Camp tenders	129	2.11	10.2	63.29
Foremen	168	2.61	9.9	78.55
General laborers	2440	1.98	9.6	46.16
Housekeepers	66	1.18	9.3	29.99
Managers	63	3.95	9.7	116.23
Mechanics	89	3.65	9.1	78.80
Milkers	91	2.12	9.3	60.16
Teamsters	69	2.05	9.5	51.16
Tractor engineers	21	3.98	9.4	39.69
Sheep herders	774	1.95	10.5	56.73
All others	36	3.14	9.6	77.61
Totals and averages	4486	\$2.04	9.9	\$51.89

Total number of firms reporting	764
Average number of regular employees	4461
Number employees used in busy season	8577
Minimum number of regular employees	3172

B. MINES, MILLS AND QUARRIES**Average Daily Wage and Hours of Labor of Employees,
Classified by Occupations**

Occupation	Number of employees	Average wages per day	Average hours per day	Average pay for Nov. 1917
.....	61	\$5.22	8.0	\$141.78
.....	41	5.20	8.8	134.56
.....	21	5.73	8.0	137.20
.....	156	5.26	8.0	125.01
.....	44	3.91	7.4	113.53
.....	336	5.86	8.0	138.25
.....	77	4.67	7.7	131.99
.....	126	2.77	8.8	96.10
.....	103	5.29	8.0	132.52
.....	29	5.37	8.0	156.36
.....	91	4.63	8.0	123.70
.....	443	5.78	8.0	161.17
.....	319	5.29	8.0	134.54
.....	785	4.30	8.0	107.62
.....	57	5.60	8.0	163.81
.....	2660	3.82	8.0	89.21
.....	3124	4.69	8.0	124.84
.....	1337	4.39	8.0	95.37
.....	569	4.96	8.0	123.00
.....	36	4.88	8.0	133.34
.....	58	7.66	8.5	237.17
.....	19	7.61	8.0	227.92
.....	20	7.51	8.0	211.08
.....	112	5.67	8.0	145.06
.....	150	5.56	8.0	138.30
.....	24	5.66	8.0	144.06
.....	24	5.15	8.0	117.35
.....	18	4.58	8.0	123.80
.....	115	7.60	8.0	216.73
.....	16	3.52	8.0	87.92
.....	14	7.33	8.0	210.30
.....	18	5.66	8.0	153.71
.....	76	4.74	8.0	115.48
.....	56	4.62	8.0	114.74
.....	67	4.16	8.0	86.98
.....	58	4.41	8.0	109.66
.....	109	3.78	9.0	88.21
.....	39	2.30	8.1	55.87
.....	11358	\$4.59	8.0	\$114.56

Number of firms reporting	295
Number of regular employees	10073
Number of employees used in busy season	15406
Number of regular employees	8428

C. MANUFACTURING INDUSTRIES

TABLE 15. Average Daily Wage and Hours of Labor of Employees,
Classified by Occupations

Occupation	Number of employees	Average wages per day	Average hours per day	Average pay for Nov. 1917
Auto drivers.....	7	\$4.19	9.2	\$100.08
Bookkeepers.....	29	3.47	7.8	80.89
Binders.....	7	3.14	8.0	77.27
Boxmakers.....	33	2.74	10.0	65.38
Blacksmiths.....	6	4.02	8.1	109.55
Bricklayers.....	18	7.11	8.0	63.84
Collectors.....	22	4.29	8.4	100.52
Clerks.....	66	3.55	7.8	91.31
Carpenters.....	68	5.80	8.0	100.55
Compositors.....	5	4.85	8.0	136.56
Carriers (paper).....	14	0.77	1.5	20.73
Cooks.....	8	2.53	10.0	73.30
Editors.....	8	6.80	8.5	154.12
Electricians.....	29	4.31	9.7	79.42
Engineers.....	37	4.63	9.3	123.15
Firemen.....	7	3.58	11.0	95.47
Foremen.....	57	5.11	8.5	123.81
Helpers (all kinds).....	54	3.48	8.0	66.16
Icemen.....	16	2.99	10.0	73.84
Linotype operators.....	24	4.33	8.7	100.25
Linemen.....	16	4.88	8.0	86.10
Laborers.....	259	3.40	8.6	60.57
Millmen.....	39	2.96	10.0	49.65
Managers.....	32	6.46	8.4	177.75
Machinists.....	11	5.48	8.0	127.17
Moulders.....	7	5.36	8.0	125.24
Mechanics (other skilled).....	42	5.42	8.7	136.56
Printers.....	27	4.37	7.9	95.65
Pressmen.....	25	3.67	9.2	76.44
Painters.....	7	5.00	8.0	73.75
Powerhouse operators.....	18	2.96	8.0	53.52
Plumbers.....	14	6.07	8.0	136.78
Reporters.....	10	4.74	8.0	114.23
Superintendents.....	17	6.48	8.8	144.15
Sub-station attendants.....	9	2.86	8.0	66.26
Stenographers.....	12	2.57	8.5	48.37
Teamsters.....	11	3.61	9.5	77.20
All others.....	292	3.25	9.3	73.22
Totals and averages.....	1323	\$3.97	8.7	\$85.09

Total number of firms reporting.....	97
Average number of regular employees.....	1179
Number employees used in busy season.....	2116
Minimum number of regular employees.....	746

D. RAILROAD LINES

Table 16. Average Daily Wage and Hours of Labor of Employees
Classified by Occupations

Occupation	Number of employees	Average wages per day	Average hours per day	Average pay for Nov. 1917
Agents	115	3.63	98.4	\$108.01
Brakemen	304	4.51	9.0	108.11
Boilermakers	109	4.35	9.3	101.23
Blacksmiths	93	4.51	9.3	117.04
Bookkeepers	14	5.06	7.9	152.44
Clerks (all kind)	198	3.28	8.7	92.48
Conductors	167	5.85	9.0	159.21
Car repairers	137	3.30	9.5	90.13
Car builders	37	4.12	9.2	98.34
Carpenters	84	3.96	9.2	101.52
Car inspectors	60	4.11	10.6	96.63
Coppersmiths	16	4.23	9.1	123.39
Call boys	21	2.49	12.0	74.77
Cooks	15	2.17	9.2	57.89
Dispatchers	22	5.55	8.0	165.62
Electricians	19	3.37	9.3	89.98
Engine inspectors	14	4.28	10.2	131.55
Engineers	218	6.67	9.8	175.04
Firemen	254	4.52	9.6	117.65
Foremen	180	4.73	10.0	118.57
Helpers (all kind)	533	3.00	9.9	72.82
Hostlers	16	3.27	11.0	99.12
Laborers	558	2.22	9.8	55.40
Managers	9	12.06	8.7	336.87
Machinists	256	4.07	9.0	110.60
Master mechanics	11	8.00	9.5	204.42
Plumbers	11	3.99	9.8	110.21
Painters	42	3.48	9.4	67.11
Pumpmen	46	2.90	11.6	78.85
Roadmasters	13	5.17	8.7	144.15
Stationary engineers	16	3.60	11.7	98.55
Signal maintainers	38	3.10	8.8	81.63
Switchmen	59	4.00	8.0	101.49
Stationary firemen	10	3.10	11.7	53.05
Stenographers	20	2.85	8.0	83.32
Superintendents	11	9.81	8.8	260.00
Telegraph operators	105	3.61	8.2	103.80
Track laborers	722	2.38	10.0	48.05
Trainmasters	10	7.71	8.4	197.00
Track foremen	140	3.05	10.0	93.43
Watchmen	44	3.01	11.4	84.44
Waiters	16	1.18	9.0	27.22
Yardmasters	6	4.86	8.0	139.48
All others	424	2.83	9.5	75.59
Totals and averages	5148	\$3.52	9.5	\$89.60

Total number of firms reporting	14
Average number of regular employees	4925
Number employees used in busy season	5334
Minimum number of regular employees	4452

E. TRADES AND MERCHANDISE**Table 17. Average Daily Wage and Hours of Labor of Employees, Classified by Occupations**

Occupation	Number of employees	Average wages per day	Average hours per day	Average pay for Nov. 1917
Agents	13	\$5.00	8.1	\$148.77
Auto drivers	18	3.41	9.4	89.75
Bank officials	10	7.34	6.7	185.00
Butchers	60	4.13	10.0	108.79
Bookkeepers	148	3.34	8.0	95.32
Cooks	9	2.08	8.5	55.32
Clerks	536	3.02	8.9	81.74
Carpenters	8	5.10	8.1	96.06
Delivery drivers	123	3.14	9.1	85.31
Engineers	36	3.88	9.7	86.81
Foremen	30	4.49	9.4	120.16
Helpers	29	2.84	9.1	64.44
Janitors	36	2.10	6.7	52.25
Laborers	152	3.17	9.0	61.47
Managers	155	5.45	9.3	158.18
Presidents	16	9.90	7.0	276.79
Painters	14	6.00	8.0	76.00
Pharmacists	17	3.98	10.7	116.57
Superintendents	8	5.75	8.6	189.29
Station attendants	11	2.82	8.0	57.87
Stenographers	36	2.49	7.8	64.96
Salesladies	67	2.14	8.0	48.51
Salesmen	70	3.84	9.2	118.41
Teamsters	36	3.26	9.0	80.32
All others	409	3.46	8.4	86.99
Totals and averages	2047	\$3.52	8.6	\$91.85

Total number of firms reporting	351
Average number of regular employees	2016
Number employees used during busy season	2152
Minimum number of regular employees	1152

F. PUBLIC SERVICE**Table 18. Average Daily Wage and Hours of Labor of Employees, Classified by Occupations**

Occupation	Number of employees	Average wages per day	Average hours per day	Average pay for Nov. 1917
Attendants	10	\$2.05	14.0	\$58.30
Agricultural extension agents	12	4.58	10.0	136.80
Bookkeepers	9	4.62	8.1	136.83
Policemen	20	3.13	10.8	86.57
Cooks	7	1.91	10.4	64.31
Clerks	39	3.94	7.1	119.61
Deputies	36	4.22	7.9	118.36
Engineers, State Highway	15	5.97	8.2	165.71
Firemen (hosemen)	17	3.31	12.0	95.06
Guards	24	2.80	8.1	77.27
Janitors	96	1.51	4.3	37.40
Laborers	107	3.25	8.8	76.17
Matrons	10	2.25	11.0	64.97
Nurses	7	2.02	7.2	56.25
Stenographers	27	3.42	7.3	137.33
Superintendents	13	6.30	8.4	169.44
Under sheriffs	29	3.98	9.1	120.43
Teamsters	9	4.09	8.0	107.34
Teachers	684	4.78	7.1	108.18
All others	95	4.15	8.2	106.99
Totals and averages	1266	\$4.12	7.5	\$98.16

Total number of firms reporting	342
Average number of regular employees	1414
Number of employees used in busy season	1623
Minimum number of regular employees	1108

G. PROFESSIONAL SERVICE**19. Average Daily Wage and Hours of Labor of Employees,
Classified by Occupations**

Occupation	Number of employees	Average wages per day	Average hours per day	Average pay for Nov. 1917
.....	2	\$2.66	9.0	\$90.00
.....	3	3.47	7.3	110.00
.....	9	2.20	9.6	62.44
.....	12	2.73	9.5	90.42
.....	4	11.41	9.5	342.50
.....	42	2.64	7.0	66.97
.....	3	3.61	8.6	57.50
Totals	75	\$3.22	8.1	\$89.57

Number of firms reporting	38
Average number of regular employees	65
Number of employees used in busy season	82
Maximum number of regular employees	60

H. HOTELS, CAFES, SALOONS, ETC.**20. Average Daily Wage and Hours of Labor of Employees,
Classified by Occupations**

Occupation	Number of employees	Average wages per day	Average hours per day	Average pay for Nov. 1917
.....	10	\$2.55	7.7	\$73.67
.....	187	3.53	8.9	96.48
.....	49	3.85	10.6	96.38
.....	34	1.51	7.9	43.78
.....	43	3.09	10.4	90.73
.....	83	2.47	10.5	73.09
.....	8	2.89	9.1	84.90
.....	11	1.87	7.0	47.70
.....	21	1.99	9.5	57.02
.....	31	2.21	8.3	46.95
.....	46	3.00	8.7	75.37
.....	48	1.70	9.4	45.20
.....	29	4.96	9.9	136.85
.....	29	1.27	8.0	37.79
.....	31	1.70	7.8	38.35
.....	58	2.22	8.9	63.74
.....	4	2.75	11.0	70.00
Waitresses	120	1.58	8.3	42.38
.....	19	3.52	8.3	100.57
Totals	861	\$2.58	9.0	\$86.80

Number of firms reporting	145
Average number of regular employees	754
Number of employees used in busy season	903
Maximum number of regular employees	709

I. TELEGRAPH AND TELEPHONES**Table 21. Average Daily Wage and Hours of Labor of Employees Classified by Occupations**

Occupation	Number of employees	Average wages per day	Average hours per day	Average for
Bookkeepers.....	10	\$2.54	7.2	
Clerks.....	27	1.87	7.9	
Helpers.....	5	3.00	8.0	
Linemen.....	38	3.90	8.5	
Laborers.....	10	2.75	8.0	
Messengers.....	46	1.41	8.9	
Managers.....	32	5.67	8.4	
Telephone operators.....	121	2.02	8.0	
Wire chiefs.....	11	4.65	8.6	
All others.....	26	2.87	7.7	
Totals and averages.....	326	\$2.63	8.0	

Total number of firms reporting..... 1
 Average number of regular employees..... 25
 Number of employees used in busy season..... 37
 Minimum number of regular employees..... 23

J. TRANSFERS, GARAGES, AND STABLES**Table 22. Average Daily Wage and Hours of Labor of Employees Classified by Occupations**

Occupation	Number of employees	Average wages per day	Average hours per day	Average for
Agents.....	10	\$4.15	9.6	
Auto drivers.....	39	4.29	8.7	
Bookkeepers.....	11	3.95	8.3	
Blacksmiths.....	10	4.71	8.7	
Clerks.....	22	2.73	8.7	
Foremen.....	10	4.70	9.4	
Helpers.....	30	3.08	8.2	
Laborers.....	30	2.70	9.7	
Machinists.....	10	4.90	8.2	
Mechanics.....	53	4.65	8.4	
Motormen.....	19	2.93	10.2	
Managers.....	13	5.94	10.3	
Stenographers.....	10	2.29	7.0	
Teamsters.....	53	3.66	8.9	
All others.....	34	4.06	9.5	
Totals and averages.....	364	\$3.83	9.0	

Total number of firms reporting..... 6
 Average number of regular employees..... 34
 Number of employees used in busy season..... 46
 Minimum number of regular employees..... 21

GRAND TOTAL FOR STATE

Table 23. Average Daily Wage and Hours of Labor of Employees,
Classified by Industries

Industries	Number of employees	Average wages per day	Average hours per day	Average pay for Nov. 1917
Farming and stockraising	4,496	\$2.04	9.9	\$51.89
Mines, mills and quarries	11,368	4.59	8.0	114.56
Manufacturing industries	1,323	3.97	8.7	85.09
Railroads	5,148	3.52	9.5	89.60
Trades and merchandise	2,047	3.52	8.6	91.85
Public service	1,296	4.12	7.5	98.16
Professional service	75	3.22	8.1	89.57
Hotels, cafes and saloons	861	2.58	9.0	66.80
Telegraph and telephones	326	2.63	8.0	61.38
Transfers and garages	364	3.33	9.0	105.20
All industries in State	27,254	\$3.73	8.7	\$93.31

Total number of firms reporting	2,121
Average number of regular employees	25,628
Number employees used in busy season	37,085
Minimum number of regular employees	20,749

PART III

EMPLOYMENT OF WOMEN IN NEVADA

1917-18



PART III. EMPLOYMENT OF WOMEN

INTRODUCTION

It is a fact that more than 2,000 women are at the present time in the various industries of Nevada presents to our legislators a problem which has not heretofore been given very great attention. When the labor situation created by the employment of men workers develops to a point that nearly 10 per cent of the wage-earners in the State is represented by women it becomes a matter of grave concern to those who are interested in throwing all the possible weight around the labor of women and children in order that a tolerable or injurious burden may be placed upon them. It is important to know the wages earned and the hours worked in connection with the employment of women it is far more important to keep a watchful guard over those conditions of employment which have a pernicious effect on the health and welfare of the women. The present world crisis has provided an excuse for a small number of the large employers of labor in this State to place women in positions in no way adaptable to their sex. The occupations shown in the tables which follow do not disclose any large number of women as being employed in the less favorable employments, such as door and shopwork, but recent developments in the industry have increased the number many folds and the field is widening.

The present time the only standard governing the employment of women in this State is contained in the act limiting the hours of labor for women employed in certain industries. This law provides that women shall not be employed more than eight hours during any one day and not more than 56 hours in one week. It permits the arrangements to be made in such manner that they may be spread over any portion of the week in one day, and it is no uncommon arrangement to require women to commence work at 5 o'clock in the morning and work at intervals until 10 o'clock in the evening. It provides also for the employment of female employees but permit to use the seats is only given when they are not engaged in their active duties.

The enforcement of the above-mentioned act is placed in the power of the several District Attorneys and the Attorney-General of the State. No inspectors are provided, and the illegal conditions which are only corrected when reported by dissatisfied employees who are then punished by dismissal for their activities.

Wages and Hours of Labor

Separate tables have been prepared giving detailed information as to wages and hours, classifications being shown by counties, occupations and wages. Each table is complete in itself and deals with a total of 2,050 female employees.

Table 1 shows the distribution of women workers by counties, industries, with the result that women are employed in every county of the State and in all of the ten principal industries to which the classification extended. Washoe County leads in the total number

employed, and the public service, which includes Federal, State, county, and city, claim more than one-third of the workers.

Table No. 2 shows a classification by industries, together with the highest, lowest and average daily wages, the average hours per day, and the average pay-check for a given month. A striking feature of this table shows that four industries show a minimum wage of less than 85 cents per day, which rate is determined by finding the average of the lowest ten schedules submitted. It is refreshing, however, to find that in the average daily wage of all women employed that but two industries, taken as a whole, are paying less than \$2 per day; and that only one industry is requiring women to work longer than eight hours per day.

Table No. 3 gives a list of 21 occupations at which more than 10 women were employed, and indicates that school-teaching is the most favored calling and that it commands the highest average daily wage. Six occupations are given which show a minimum wage of less than \$1 per day, and the average daily wage of eight occupations fall below the \$2 mark, the lowest being that of housekeepers at which trade 70 women are working at an average wage of \$1.25 per day. It should be borne in mind, however, that under ordinary circumstances this occupation carries with it board and lodging, and generally speaking this same condition applies to cooks, chambermaids, maids and waitresses. The schedules used did not permit of ascertaining the number of persons to whom board and lodging were furnished, but the occupations are oftentimes suggestive of this condition.

Table No. 4 shows the age distribution of the women workers in considerable detail. An interesting feature of this table is noted in the age level at which the greater number of women are employed, the highest number being reached between the ages of 25 and 29 for all industries, which is also the case in no less than six of the ten industries reported. This shows a marked difference to similar statistics covering Eastern and Southern States, which fact is possibly due to the different grade of work done here and the absence of mills engaged in the spinning of cotton and wool, in which younger workers can be more largely employed. In the Eastern and Southern States a lower average age is shown. It is interesting, but none the less pathetic, to note that 98 women who are over 50 years of age are being obliged to work as wage-earners; it will also be noted that no less than 644 of the women have passed the age of 30. Some of these did not come into the industries as young girls, but began work later in life under the pressure of unanticipated need; but the fact remains that there is in the industries of Nevada a considerable body of women who cannot be called young.

Comparison with Conditions in 1915-1916

A study of the statistics presented in the Labor Commissioner's report for the two years 1915-1916 shows clearly that there has been a marked increase in the number of women wage-earners in Nevada during the past two years. In the first biennial report here referred to figures were given covering approximately 14,000 employees, of whom 470, or less than 4 per cent, were women workers. The statistics gathered for the present report extend to approximately 27,000 employees, of whom 2,050, or nearly 8 per cent, are women workers. A comparison of the wages earned are not easily made for

particular industries or occupations by reason of the fact that different schedules have been used, but a comparison of the average daily wage of all women workers in the State may be made and these figures show that in the years 1915-1916 women were earning on an average \$2.27 per day, while in 1917-1918 the rate had climbed to \$2.59 per day. With respect to hours of labor the first period shows that 8.5 is the average daily hours, while the 1917-1918 period shows a reduction to 7.8 hours per day. This reduction is due, of course, to the eight-hour law for women which passed the legislature and became operative in the year 1917.

TABLE I. NUMBER OF WOMEN WORKERS IN THE VARIOUS INDUSTRIES, CLASSIFIED BY COUNTIES

County	Number of women workers	Industry									
		Farming	Mining	Manufacturing	Railroads	Trades and merchandise	Public service	Professional service	Hotels, cafes and laundries	Telephones and telegraphs	Transfers and garages
Churchill.....	84	24	0	3	2	17	21	1	10	5	1
Clark.....	89	1	15	0	6	9	30	2	24	5	0
Douglas.....	66	22	1	0	1	4	16	0	22	0	0
Elko.....	250	66	5	2	16	26	106	9	11	9	0
Esmeralda.....	39	0	5	3	2	8	11	0	10	0	0
Eureka.....	33	15	0	0	2	3	12	0	1	0	0
Humboldt.....	216	42	17	0	6	26	64	0	36	2	1
Lander.....	34	14	3	0	0	1	11	2	4	1	0
Lincoln.....	43	3	2	0	1	3	32	1	0	0	1
Lyon.....	110	23	14	0	11	12	41	1	3	5	0
Mineral.....	35	4	8	0	1	0	17	0	5	0	0
Nye.....	132	10	9	4	1	10	58	7	19	13	1
Ormsby.....	89	3	0	0	0	9	60	2	10	5	0
Storey.....	20	0	3	0	1	3	12	0	0	1	0
Washoe.....	601	27	6	29	32	170	157	21	94	60	5
White Pine.....	209	15	25	3	7	40	55	11	43	7	3
Totals.....	2050	269	113	44	89	341	702	57	292	130	13

TABLE II. AVERAGE DAILY WAGE AND HOURS OF LABOR OF WOMEN WORKERS, CLASSIFIED BY INDUSTRIES

Industry	No. of women workers	Highest daily wages	Lowest daily wages	Average daily wages	Average hours per day	Average pay check for Nov. 1917
Farming and stockraising.....	269	\$3.77	\$0.59	\$1.46	10.0	\$35.82
Mines, mills and smelters.....	113	4.12	1.29	2.40	8.0	59.53
Manufacturing industries.....	44	3.29	1.08	2.17	8.0	42.21
Railroads.....	89	3.61	0.77	2.26	8.0	59.91
Trades and merchandise.....	341	3.57	0.72	2.11	8.0	56.09
Public service.....	702	6.11	1.13	4.03	7.0	88.94
Professional service.....	57	2.97	1.31	2.59	7.0	69.40
Hotels, cafes and laundries.....	232	2.88	0.84	1.27	8.0	39.60
Telegraph and telephones.....	130	3.37	1.28	2.07	7.3	45.68
Transfers and garages.....	13	3.28	1.14	2.39	7.7	50.89
Totals and averages.....	2050			\$2.59	7.8	\$62.02

TABLE III. AVERAGE DAILY WAGE AND HOURS OF LABOR OF WOMEN WORKERS, CLASSIFIED BY OCCUPATIONS

Occupations	No. of women workers	Highest daily wages	Lowest daily wages	Average daily wages	Average hours per day	Av. pay-check for Nov. 1917
Bookkeepers	82	\$3.90	\$1.21	\$2.44	7.0	\$61.89
Cooks	238	3.56	1.90	1.67	9.0	44.01
Cashiers	33	2.96	1.47	2.21	8.0	59.94
Clerks	167	3.63	1.50	2.13	8.0	57.75
Chambermaids	38	2.36	0.82	1.50	7.0	43.57
Deputies	11	4.76	2.99	3.90	7.1	94.23
Farmers	21	2.30	2.26	2.13	10.0	29.65
Housekeepers	70	2.24	0.64	1.25	10.2	35.86
Ironers	27	2.92	1.45	2.22	7.0	43.37
Janitresses	45	2.56	0.52	1.04	8.9	21.90
Laundry workers	14	1.80	1.18	1.25	8.0	26.87
Matrons	10	2.58	1.61	2.24	9.1	64.96
Maids	25	1.73	1.11	1.49	8.0	39.84
Mangle hands	31	1.95	1.51	1.70	7.3	33.86
Managers	11	3.84	2.24	2.71	8.0	72.35
Nurses	22	4.14	1.36	2.21	9.0	80.00
Telephone operators	102	3.19	0.95	1.85	7.8	44.09
Stenographers	146	4.21	1.25	2.62	7.1	67.72
Salesladies	67	3.25	1.55	2.02	7.0	45.17
School teachers	559	5.80	2.29	4.21	7.2	96.44
Waitresses	139	2.49	0.98	1.60	8.0	36.56
All others	198	4.18	0.73	2.16	7.8	54.31
Totals and averages	2050			\$2.59	7.8	\$62.02

TABLE IV. AGES AND AVERAGE EARNINGS PER DAY OF WOMEN WORKERS, CLASSIFIED BY INDUSTRIES

Ages	Farming		Mining		Manufacturing		Railroads	
	Women workers	Average daily wages	Women workers	Average daily wages	Women workers	Average daily wages	Women workers	Average daily wages
Under 16 years	4	\$0.75	0		0		0	
16 years	5	1.70	0		0		0	
17 years	4	1.29	0	\$2.00	0		0	
18 years	7	1.21	1		0		2	\$2.21
19 years	7	1.19	1	2.55	2	\$1.75	6	2.46
20 years	15	1.25	3	1.68	2	2.74	4	2.41
21 years	5	2.07	4	2.93	0		3	2.39
22 years	4	1.74	4	1.71	1	2.00	2	2.02
23 years	11	1.87	2	1.66	0		1	2.79
24 years	3	1.18	2	2.50	1	1.50	2	2.47
25 to 29 years	33	1.55	8	2.37	6	2.58	13	2.44
30 to 34 years	27	1.36	10	2.76	1	0.82	17	2.86
35 to 39 years	35	1.51	7	2.47	2	3.25	11	2.01
40 to 44 years	18	1.49	12	2.41	0		5	1.76
45 to 49 years	12	1.56	8	2.23	1	3.00	2	2.32
50 years and over	26	1.61	9	2.48	2	0.90	4	2.62
Age not given	53	1.44	42	2.42	26	2.11	17	1.50
Totals and averages	269	\$1.46	113	\$2.40	44	\$2.17	89	\$2.26

AGES AND AVERAGE EARNINGS PER DAY OF WOMEN WORKERS, CLASSIFIED BY INDUSTRIES

Ages	Trades and merchandise		Public service		Professional Service		Hotels, cafes, etc.	
	Women work-ers	Average daily wages	Women work-ers	Average daily wages	Women work-ers	Average daily wages	Women work-ers	Average daily wages
0			15	\$0.51	0		1	\$1.00
3		\$1.26	1	.50	1	\$2.00	3	1.05
9		1.24	0		1	1.25	4	1.37
14		1.42	4	1.43	3	1.50	9	1.23
16		1.87	16	3.33	3	2.06	13	1.06
18		2.07	26	3.59	3	1.76	6	1.22
18		1.94	34	4.47	3	2.52	7	1.39
17		2.01	34	4.07	4	2.45	12	1.35
16		2.30	39	3.94	3	2.93	7	1.35
14		2.22	33	4.24	4	2.77	10	1.23
53		2.44	97	4.50	11	2.97	49	1.27
37		2.09	48	4.04	2	3.25	40	1.34
25		2.38	48	4.32	3	3.33	28	1.19
12		2.61	30	3.59	4	2.78	31	1.27
6		2.49	23	3.70	0		18	1.21
7		1.76	20	3.02	2	2.41	23	1.28
81		2.11	234	4.25	10	2.44	31	1.26
	341	2.11	702	4.08	57	2.59	292	1.27

AGES AND AVERAGE EARNINGS PER DAY OF WOMEN WORKERS, CLASSIFIED BY INDUSTRIES

Ages	Telegraph and telephone		Transfers, garages, and stables		All industries combined	
	Women work-ers	Average daily wages	Women work-ers	Average daily wages	Women work-ers	Average daily wages
0			0		20	\$0.58
0			0		13	1.38
2		\$1.33	0		21	1.32
7		1.47	2	\$1.90	48	1.43
12		1.64	2	2.41	79	1.38
9		1.91	1	1.73	87	2.31
7		1.79	0		76	3.25
15		2.55	1	2.00	94	2.76
10		2.39	0		89	2.84
2		2.30	2	2.62	73	3.01
24		2.29	0		294	2.83
7		2.12	3	3.20	191	2.42
3		1.64	0		182	2.53
3		3.03	1	3.00	116	2.38
2		2.57	0		72	2.40
5		2.26	0		98	1.98
22		2.14	1	1.00	517	2.96
	130	\$2.07	13	\$2.39	2050	\$2.59

PART IV
LABOR LEGISLATION IN NEVADA
1917-18



IV. LABOR LEGISLATION IN NEVADA

GENERAL REVIEW

of the labor legislation enacted during the 28th session of the legislature in the year 1917 shows that approximately 39 introduced which, broadly speaking, were in the nature of laws. It appears that 18 of these laws cover entirely new legislation while 21 were in the nature of amendments to laws already in force. Not all of these bills were passed, however, and the table shows more than one-half of them were rejected in either the Senate or the Assembly.

The labor laws finally enacted an examination will show that they are largely new, while 10 were purely amendatory in character. The following summary is given:

New Laws

- Eight-hour law for women wage-earners.
- Prohibition of wages evidence of fraud.
- Compensation for road workers in Clark County.
- Transportation for school teachers attend institutes.
- Provision for vocational education. (2)
- Establishment of evening schools made possible.
- Day closing law for barber-shops.

Amendatory Laws

- Increasing compensation under mothers' pension law.
- Prohibition of mines.
- Mechanics' liens. (2)
- Gratuity allowance in Labor Commission.
- Regulations for automobile drivers.
- Compensation for road workers.
- Men's compensation.
- Compensating lost time of school teachers.
- Transfer of voting places for transportation employees.

The legislature of 1917 approximately 460 bills of all kinds were introduced of which only a little more than 8 per cent were labor bills. The percentage appears to be considerably lower than in other States. Massachusetts, for example, reports that "approximately 13 per cent of the 2,846 bills introduced during the session were in the nature of labor bills." Whether or not the small percentage applying to Nevada is due to the reluctance of legislators to pass legislation in connection with labor is a matter of conjecture, but the fact that a broad field of industrial problems are still unsolved in

Scope and Nature of Report

several things which have an important bearing and relation to the general subject of legislation, and no study of the subject without a proper consideration of these associated activities. In connection therewith there is the recommendations of the Governor in his annual message to the legislature, which should go far toward laying a foundation for general legislation; the opinions of the

Attorney-General which are necessary in doubtful cases; and the decisions of the Supreme Court of the State, necessary to the settlement of disputed points.

For the purpose of convenient and easy reference this part of the report has been subdivided into five divisions, as follows:

A. *Recommendations of the Governor*—Under this division is reproduced excerpts from the Governor's Message to the 28th Session of the State Legislature on matters concerning labor.

B. *Index to Bills Introduced Affecting Labor*—This division consists of an index, in tabular form, to the various bills affecting labor which were introduced during the legislative session of 1917. The bills are classified by subjects in order that the proposed legislation on any particular question may be readily accessible. The index shows in which house the bill originated, with the original assembly or senate number, the subject-matter of the bill introduced, the attitude of union labor on the measure, the senate and assembly action on the bill, and the chapter number of all bills finally becoming laws.

C. *Synopsis of the Acts Finally Passed*—In this division the several laws have been listed by chapter number in the order in which they were enacted. The synopsis is given in brief and merely sets out the principal features of the measure. In order to indicate where the complete text of the new law, or amended law, may be found a citation is given at the end of each synopsis.

D. *Opinions of the Attorney-General*—Verbatim copies of all interpretations secured from the Attorney-General during the years 1917 and 1918 on laws relating to labor are recorded in this division for easy reference and for the information of the large number of wage-earners who have no occasion to examine the reports of the Attorney-General.

E. *Decisions of the State Supreme Court*—In this division the decisions of the State Supreme Court affecting labor are set forth. The findings of the court are given in a brief synopsis of the case stated in the language of the commissioner, supplemented with pertinent but brief excerpts from the written decision, with the expectation that those who desire to review or use the court's decisions will avail themselves of the official text of same, which may be found by noting the citation given.

Interest in Labor Legislation

Every person who toils is especially interested in labor legislation and there is a growing demand for the labor commissions of the various States to keep such persons informed by the issuance of special bulletins and reports covering every phase of the subject. By a small number of persons, apparently hopeful that such matters may remain hidden from easy review, it is argued that all such detail may be learned by reading and studying the various reports, books, records, etc., from which this compilation is made. A little reflection on this question will justify the statement that it is practically impossible for the average worker to supply himself with this information. He would need before him the Statutes of Nevada, the Nevada Reports, the Journals of the Senate and Assembly, the Messages of the Governor, the reports of the Attorney-General, and numerous other documents.

No other part of the Labor Commissioner's report should be given

wider publicity, nor studied more closely than the chapter dealing with labor legislation, and the interest in this subject is clearly growing keener as the various state commissioners come to appreciate the demands of labor and act in response thereto.

A. RECOMMENDATIONS OF THE GOVERNOR ON LEGISLATION AFFECTING LABOR, 1917

Teachers' Pensions

"At its last session the legislature provided for the pensioning of retired public-school teachers who had given a certain term of service to the State, the funds for this purpose to be supplied by a small millage tax on the property of the State and by an assessment of the teachers themselves. The framers of the law evidently attempted so to fix the levy and the assessment that an equal sum would be derived from each of the two sources of revenue, thus equitably distributing the burden of caring for the retired teachers between the State and the profession.

"Notwithstanding some criticism directed at the cost to the fund of administering the act and some complaint from the teachers that only a very insignificant number of their guild ever receive any benefits from the plan, I think that the people of the State are well pleased to know that the unselfish service of the men and women who devote their active lives to public-school work is recognized to the extent that these public servants—who by the very nature of their employment are restricted in their opportunities to acquire competencies—have had some provision made for their declining years.

"The absolute absence of data gained from experience with the act over any considerable period makes me feel, however, that we are proceeding very blindly in our scheme of finance for this particular department. It is reasonably certain that we are collecting either too much or too little money to take care of future requirement. If the figures in mortality tables can be applied to a hypothetical case here, where only one-half of one per cent of those now engaged in teaching are assumed to finally retire and obtain retirement salaries for the number of years which, as an average, they may be expected to live after retirement, the present revenue will prove to be inadequate and the unfortunate experience of New York and Illinois, where the teachers' pension funds are found to be actuarially insolvent, may be duplicated here.

"As I see it, the State is morally bound to a continuance of the plan and is equally committed to the proposition that the fund be safeguarded by an intelligent plan of current finance which will leave it always intact and equal to the demands to be made upon it.

"A teacher's pension is nothing more or less than an annuity, the cost of which is influenced by factors which include the percentage of withdrawals and deaths among prospective beneficiaries and the average life expectancy of those who qualify by a term of service.

"It is probable that the State could purchase such annuities under a plan whereby the cost would be borne equally by the State and the teachers while the latter were in service and wholly by the latter, if it were so desired, when not in service. If this plan proves practical, it will remove much of the cause of complaint against the present system. If it does not, on further investigation, prove practical, the

administration of the department should be delegated to the Industrial Insurance Commission with provision for the payment of the State of the cost of this service, or to an unpaid commission up of active teachers, with perhaps one state officer acting ex officio.

"Since the complaints regarding the act originate from the teachers themselves—the beneficiaries of the act—it is my desire to presume it will be your desire, to see them given as large a share as possible, both in the adoption of a scientific plan and in its successful administration."

The Nevada Industrial Commission

"This department has been so conducted during the past year as to meet very general approbation both from the social and business community affected by it within the State and from students of the operation of so-called workmen's compensation legislation elsewhere. Your attention is particularly called to the very detailed report of the commission.

"It is believed that because of the continuous and careful study of accident and financial experience under the act and by constant readjustment of current rates, this State has, with substantial accuracy, provided for the settlement of all claims which current and future may ever lodge against the Industrial Insurance Fund, and that the unfortunate experience of similar commissions in other States because of improper estimation of rates and liabilities, serious depletion of the insurance funds has occurred, has been properly avoided against.

"The last session of the legislature made a progressive step in providing for 'first aid' or medical attention, at the expense of the industry, to victims of industrial accidents, thus removing one of the principal objections to the original measure. This medical provision appears to have been cared for satisfactorily, in the main, by the industrial organizations, but some just complaint has come from the individual small employer on whom compliance with the law in the case of very severe injury may prove so burdensome as to exhaust his financial resources. It is recommended that the act be amended to permit the assumption by the state fund of the employer's obligation to provide first aid in all cases where the employer elects to pay additional rates compensatory for the average service performance of the equalizing the burden on the small industries, the individual employer of which cannot stand the shock of the expense incidental to industrial accidents.

"Likewise your serious attention is directed to the need for amendments to the act more clearly defining the responsibility of the employer who does not reject the act, yet fails or refuses to pay his contribution into the State Insurance Fund.

"In line with the legislation needed to correct such defects and since experience has developed in the Industrial Act itself, a recommendation is hereby made that by a special act you make it unlawful for an employer not electing to accept the benefits of the Nevada Industrial Insurance Act, to assess the cost of the liability thereby created either in whole or in part against the employee.

"Finally, it is recommended that the period during which compensation is paid in cases of permanent total disability be extended to the life of the injured person. Simple humanity and justice demand

is, as the expression implies, permanently and totally disabled not at the end of any brief period within his life be left a charge on society."

Social Insurance

In an incredibly brief period a complete change in public sentiment in this country has overturned certain of the common-law doctrines and obligations created by employment in the case of industrial accidents. The practical result of this change is the workmen's compensation law, now more or less generally adopted throughout the country, accepted everywhere as sound and scientific in principle. The principle and its practical application was old in Europe when introduced here. There is ample evidence of a rapidly changing sentiment in the United States for a further assumption of greatly extended powers to insure the public against accidents, employment and old age. Like workmen's compensation, massive reforms have passed through more than the pioneer stage in Europe, and the agitation for their adoption in America is confined to any radical group or our own citizens. Forward-looking people are impressed with the fact that within no very extended period agitation will have created a popular demand for social insurance under state control that must be met by scientific legislation. The situation at this time as regards social insurance is not so different from the situation which existed just prior to the adoption of workmen's compensation in America. It were well to remember the lessons regarding the advent of the former as no more Utopian than the prediction made a decade ago that industrial accidents were then inevitable.

Because of the complexity of the subject, because conditions here are different from those in this State, and because the evidence points to the adoption of social insurance in other States even at this time, it appears that the State should avoid costly errors by preparing statistical data which will guide us in such policy as the State may later

investigation of the subject by state officials is recommended. Investigation, if delegated to the properly equipped departments of government, can be conducted at trifling cost and will produce data on which future legislation may predicate intelligent

Labor Commission

The session of the Legislature created the office of Labor Commissioner.

The department, although hampered by the obstacles incident to the carrying out of any new governmental activity and by an insufficient staff, has plainly indicated its utility not only to the very large number of our population within the wage-earning class and to the business community, but to 1915, had no official representation in the state executive department, but to the general industry of the State without exception as well.

The Labor Commission by the collection and publication of the statistics of our industries can bring about just contractual relations between employer and employee by the sheer force of educated public opinion. It is the logical agency to prevent the defrauding of work-

men by unscrupulous employers through any of the devices credited by the fair and intelligent elements in all classes, and doubtless will, in the future as in the past, serve as a device of mediation prepared to harmonize and adjust the majority of records and disputes incident to all industrial relations, thus promoting social comity and contributing to the peace and prosperity of the State.

"Enlarged powers and an adequate appropriation for their maintenance are respectfully urged."

B. INDEX TO BILLS AFFECTING LABOR INTRODUCED IN THE LEGISLATIVE SESSION OF 1917

Assembly or senate bill	Subject matter of the bills introduced	Attitude of union labor	Senate action on bill	Assembly action on bill
	<i>1. Industrial Education</i>			
S. 128.....	Establishment of evening schools.....	For.....	Adopted..	Adopted..
S. 176.....	An Act requiring partial contribution by communities receiving benefits of vocational education.....	For.....	Adopted..	Adopted..
A. 248.....	Acceptance by State of the vocational educational act passed by the Federal Government.....	For.....	Adopted..	Adopted..
	<i>2. Housing of Working People</i>			
A. 270.....	Building cottages for school teachers.....	For.....		Rejected..
	<i>3. Safety and Sanitary Regulations</i>			
S. 75.....	Construction of caboose cars on the railroad trains.....	For.....	Rejected..	
S. 132.....	Sanitary regulations and Sunday closing law for barber shops.....	For.....	Adopted..	Adopted..
A. 17.....	Posting of safety regulations for protection of miners.....	For.....	Adopted..	Adopted..
S. 44.....	Safety regulations governing drivers of automobiles.....	For.....	Adopted..	Adopted..
	<i>4. Labor Commission</i>			
S. 60.....	Enlarging powers of Labor Commissioner and creating Bureau of Labor and Agriculture.....	For.....	Rejected..	
SS. 60.....	Increasing allowance for clerical pay to \$1,200 per annum.....	For.....	Adopted..	Adopted..
S. 83.....	An act to abolish the office of Labor Commissioner.....	Against	Adopted..	Rejected..
A. 55.....	Enlarging powers of Labor Commission.....	For.....		Rejected..
	<i>5. Wages and Hours of Labor in Public Employment</i>			
S. 136.....	Fixing hours of labor in state, county and municipal offices, and providing for Saturday half-holiday.....	For.....	Rejected..	
S. 161.....	Reducing salary of state employees.....	Against	Rejected..	
A. 62.....	Repeal of section fixing wages for public road workers.....	Noncommittal		Rejected..
A. 151.....	Clark County authorized to fix wages for public road workers.....	Against	Adopted..	Adopted..
A. 228.....	Discontinuance of fixed wages for public road workers and permitting overtime.....	Against	Adopted..	Adopted..
A. 249.....	Providing wages for teachers during intermissions of 30 days caused by sickness or epidemic.....	For.....	Adopted..	Adopted..
	<i>6. Hours of Labor in Private Employment</i>			
S. 159.....	Regulating the hours of drug clerks and druggists and fixing ten-hour maximum.....	For.....	Rejected..	
A. 53.....	Amendment to hours-of-service law for mines and open cuts to include other concerns.....	For.....		Rejected..

INDEX TO BILLS AFFECTING LABOR—Continued

Subject matter of the bills introduced	Attitude of union labor	Senate action on bill	Assembly action on bill	Chapter number if enacted
<i>Workmen's Compensation and Industrial Insurance</i>				
Amendment to compensation law, changing the appointing board	Noncommittal	Rejected		
Amendment to compensation law, reducing salary of chairman	Against	Rejected		
Amendment to compensation law, moving headquarters to Reno	Against		Rejected	
Amendment to compensation law, permitting employers to elect to accept same, providing burial expenses, etc.	For	Adopted	Adopted	233
<i>8. Women and Children</i>				
Hours of labor for female employees	For	Adopted	Adopted	14
Amendment to act providing support for dependent mothers, making more liberal allowance	For	Adopted	Adopted	11
<i>9. Labor Unions</i>				
Recognition of labor unions and prohibiting injunctions in labor disputes	For	Rejected	Adopted	
<i>Payment and Collection of Wages</i>				
Monthly pay-day for wage-earners	For	Rejected	Adopted	
Requiring prompt payment of wages and allowing continuance of pay on failure to pay within five days	For		Rejected	
Act making assignment of wages conclusive evidence of fraud	For	Adopted	Adopted	94
<i>11. Mechanics' Liens</i>				
Liens on motor vehicle for supplies, repair and labor	Non committal		Rejected	
Amendment to mechanics' lien law requiring the clause requiring owner record date of completing work	For	Adopted	Adopted	41
Amendment to mechanics' lien law requiring the recording of notices by owners who disclaim responsibility for the payment of labor	For	Adopted	Adopted	232
<i>State Cooperation and Ownership</i>				
Providing for advancement of state lands to prospectors and cooperative ownership of property located	Noncommittal		Rejected	
Leasing and operation of a state oilfield for the reduction of custom	Noncommittal		Rejected	
<i>13. Miscellaneous</i>				
Reimbursement of transportation expenses of school teachers to and from Teachers' institute meetings	For	Adopted	Adopted	88
Providing for registration of employers in the mining industry	For		Rejected	
Transfer of voting places for persons employed in moving trains, stages and U. S. mail	For	Adopted	Adopted	
Registration Bureau for school teachers	For	Adopted	Rejected	

THIS IS OF THE ACTS AFFECTING LABOR PASSED DURING THE LEGISLATIVE SESSION OF 1917

Dependent Mothers.

The allowance to each of such mothers shall not exceed twenty-five dollars per month when she has but one child under the age of 15 years, and if she has more than one child under the

age of 15 years, it shall not exceed the sum of twenty-five dollars per month for the first child and fifteen dollars a month for each of the other children under the age of 15 years, but in no case shall the entire allowance for mother and children be more than fifty-five dollars per month. *Amendment to Chapter 131, Statutes 1915.*

Hours of Labor for Women.

CHAP. 14. No female shall be employed in any manufacturing, mechanical, or mercantile establishment, laundry, hotel, public lodging-house, apartment house, place of amusement, or restaurant, or by any express or transportation company in the State, more than eight hours during any one day or more than fifty-six hours in one week. * * * Every employer shall provide suitable seats for all female employees, and shall permit them to use such seats when they are not engaged in the active duties of their employment. *New Law. Chapter 14, Statutes 1917.*

Safety and Inspection of Mines.

CHAP. 25. The Inspector of Mines shall have the power to appoint two deputy inspectors. * * * It shall be unlawful for any person to ride upon the rim, bail, or cable of a hoisting-bucket, cage or skip, and it is hereby made the duty of every operator to post notices of same in all stations and upon all gallows frames. *Amendment to Sections 4206 and 4231, Revised Laws of Nevada, 1912.*

Mechanics' Lien Law.

CHAP. 41. Every person claiming the benefits of this chapter shall, not earlier than ten days after the completion of his contract, or the delivery of material by him, or the performance of his labor, as the case may be, and not later than fifty days after such completion of his contract or the delivery of material or performance of labor by him, file for record with the county recorder of the county where the property or some part thereof is situated, a claim containing a statement of his demands after deducting all just credits and set-offs, with the name of the owner or reputed owner if known, also the name of the person by whom he was employed or to whom he furnished the material, with a statement of the terms given, and conditions of his contract, and also a description of the property to be charged with the lien sufficient for identification, which claim must be verified by oath of himself or some other person. *Amendment to Section 2217, Revised Laws of Nevada, 1912.* (Memorandum: That part of the law requiring the owner to file an affidavit recording the date of completion of building is repealed.)

Transportation Expenses of School Teachers.

CHAP. 88. It shall be the duty of school boards whenever a Teachers' Institute is called for the county or supervision district in which their respective school districts are located to pay the actual necessary transportation expenses of any teacher or teachers under their charge to and from such institute or institutes out of the county school fund. *New Law, Chapter 88, Statutes 1917.*

Assignment of Wages.

CHAP. 94. Every assignment of wages, salary, or earnings made by any person against whom there is, at the time such assignment is made,

an unsatisfied judgment for debt on the records of any court within the county in which such judgment debtor resides, shall be conclusive evidence of fraud, and shall be void against the judgment creditor of the person making such an affidavit. *New Law, Chapter 91, Statutes 1917.*

Wages for Public Road Workers, Clark County.

CHAP. 157. The county commissioners of the county of Clark shall fix the compensation of teams and all employees in the construction or maintenance of the roads and highways of said county. *New Law, Chapter 157, Statutes 1917.*

Administration of Vocational Educational Funds.

CHAP. 171. The state board of education, acting as a state vocational education board, shall appropriate money to local communities for the teaching of agriculture and of trades and industries and household economics subjects only on the basis of an equal contribution by each community for the purpose of such instruction organized under provisions acceptable to the federal board of vocational education. *New Law, Chapter 171, Statutes 1917.*

Labor Commission of Nevada.

CHAP. 178. Said commissioner shall receive as compensation for his services as Labor Commissioner a salary of six hundred dollars (\$600) per annum, payable in monthly installments out of the state treasury of Nevada as other salaries are paid. Said Commissioner shall receive his actual necessary traveling expenses when traveling in the discharge of his official duties, and may employ such clerical or stenographic assistance, not to exceed the sum of twelve hundred (\$1,200) dollars per annum, as may be approved by the board of examiners. *Amendment to Chapter 203, Statutes 1915.*

Safety Regulations for Automobile Drivers.

CHAP. 181. No person under 16 years of age shall be permitted to drive or operate any motor vehicle in any incorporated or unincorporated city or town in this State. It shall be the duty of every chauffeur or driver of automobiles equipped with and using electric lights upon the public highways of this State to effectually apply the dimmer to the forward light or lights of the vehicle being driven by him and cause such light or lights to be dimmed and lessened so as not to interfere with the sight or temporarily blind the vision of the driver of any approaching vehicle. *Amendment to Chapter 230, Statutes 1915.*

Establishment of Evening Schools.

CHAP. 191. The state superintendent of public instruction shall authorize any local board of school trustees to establish evening schools in any school district whenever fifteen or more bona fide applicants residing therein shall petition him in writing for the same. Such schools shall be open to native and foreign-born youths and adults, and the course of instruction therein shall be approved by the state board of education. (*New Law, Chapter 191, Statutes 1917.*)

Wages and Hours of Labor on Public Roads.

CHAP. 205. Compensation to other than road inspectors shall be not to exceed the current wage rate for day's work for the district in which such work is performed. * * * A day's work on the public road

shall consist of at least eight hours actual labor, exclusive of the time in going to and returning from the work, and in no case shall pay be given for more than one day's time between sunrise and sunset of the same day, to or for the same person. In case of emergency, however, more than eight hours' labor shall be performed, and the persons so performing such labor shall be compensated for the time spent. *Amendment to Sections 3034 and 3035, Revised Laws of Nevada, 1912.*

Acceptance of Federal Vocational Act.

CHAP. 209. That the State of Nevada does hereby accept the benefits of an act passed by the Senate and House of Representatives of the United States of America in Congress assembled, entitled "An Act to provide for the promotion of vocational education; to provide for cooperation with the State in the promotion of such education in agriculture and the trades and industries," approved February 23, 1917, and will observe and comply with all the requirements of said act. The state board of education is hereby designated as the state board for the purpose of the said act and is hereby given all necessary power to cooperate with the federal board of vocational education in the administration of the provisions of said act. *New Law, Chapter 209, Statutes 1917.*

Salaries of School Teachers During Limited Intermission.

CHAP. 210. When an intermission of less than six days is ordered by the trustees no deduction of salary shall be made therefor. When, on account of sickness or epidemic, a longer intermission is ordered by the board of school trustees or by a duly constituted board of health, and such intermission or closing does not exceed thirty days at any one time, there shall be no deduction or discontinuance of salary or salaries therefor. *Amendment to Section 3313, Revised Laws of Nevada, 1912.*

Sunday Closing Law for Barbershops.

CHAP. 227. It shall be unlawful in any town of the State having a population of more than ten thousand people, for any person, or persons, company or corporation, to keep open or permit to be kept open, any barbershop or public place for the purpose of carrying on or applying the barber trade or business, or to conduct such business, on the first day of the week, commonly called Sunday, that is to say, between the hours of twelve (12) o'clock midnight on Saturday of any week, and twelve o'clock midnight of the following day, Sunday. *New Law, Chapter 227, Statutes 1917.*

Transfer of Voting Places for Transportation Employees.

CHAP. 231. Any registered elector employed in moving trains, stages, or U. S. mail upon any of the transportation routes in this State may apply to the county clerk, at any time prior to the delivery of the certified copy of the register to the inspector of elections, to have his name taken off the official register and to receive from the county clerk a certificate of transfer. Such certificate shall be in a form similar to the registration card, and contain all the information set forth on such card. Upon presentation of such certificate at any time not later than one hour prior to the closing of the polls, to the inspector of elections, in any precinct on the railroad, stage line, or transportation route on which he is employed, including the precinct in which he originally

shall be entitled to vote. *New Law, Chapter 231, Statutes*

Large Lien Law.

Owners of property who disclaim responsibility for claims made thereon must post a notice to that effect on the land and also shall, within five days after such posting, file a certified copy of such posted notice with the recorder of the county in which the said land or building is situated, together with an affidavit in support showing such posting of the original notice. Such filing is prima facie evidence of said posting. *Amendment to Revised Laws of Nevada, 1912.*

Compensation for Injuries.

Only such employers as shall specifically accept the provisions of the act are presumed to have accepted it. Provides for compensation by State, county, and cities; that employees within the scope of the act shall receive prompt medical attention; for compensation for injured employees and their dependents; benefits of \$125; that claims must be filed with the industrial commission board within 30 days after accident, or within one year after death; and that the industrial commission board must have books and accounts kept monthly or more often. (*Amendment to Chapter 111, Statutes Chapter 190, Statutes 1915.*)

REPORT OF THE ATTORNEY-GENERAL CONSTRUING PROVISIONS OF LABOR LAWS

W—Female Employees Not to Work Longer Than Eight Hours in a Twenty-four Hour Period.

CARSON CITY, August 17, 1917.

WALLACE, *Labor Commissioner, Carson City, Nevada.*

We wish to acknowledge receipt of your letter of the 17th inst. inquiring whether or not an employer may work his female employees more than eight hours during the twenty-four hours of one day, and arranges that they will not work more than fifty-six hours in one week.

The provisions of law applicable to this particular matter are found in the act relating to the hours of labor of females, etc. (Stats. 1916, 16). The act reads as follows:

Female shall be employed in any manufacturing, mechanical, or mercantile establishment, laundry, hotel, boarding-house, apartment house, place of amusement, restaurant, or by any express or transportation company, shall not be required to work more than eight hours during any one day, or more than fifty-six hours in one week. The hours of service shall be so arranged as to permit the employment of females at such times as to permit them to work no more than eight hours in any one day, or twenty-four hours of one day, or fifty-six hours in any one week; *provided, however*, that the provisions of this act in relation to hours of employment shall not apply to the harvesting, curing, canning, or drying of any variety of perishable fruit or vegetables, nor to nurses, or to nurses in training in hospitals.

It is provided in section 4 that:

Any employer who shall permit or require any female to work in any of the places mentioned in section one more than the number of hours provided for in this act during any day of twenty-four hours, or who shall fail, neglect or refuse to so arrange the work of females in his employ so that they shall not work more than the number of hours provided for in this act during any day of twenty-four hours, shall be guilty of a misdemeanor.

When these two sections are read together it is plain that the legislation intended that no employee mentioned in section one should work more than eight hours during any one day of twenty-four hours.

The question you ask should, therefore, be answered in the negative.

Very truly yours,

WM. MCKNIGHT, *Deputy Attorney-General.*

Eight-Hour Law—Miners Not to Work Longer Than Eight Hours Per Day Except Where Life or Property is in Danger.

CARSON CITY, April 2, 1918.

HON. ROBT. F. COLE, *Labor Commissioner, Carson City, Nevada.*

DEAR SIR: We wish to acknowledge receipt of a letter written to you by a mining company, with your request for an opinion upon the questions therein asked, namely:

1. In the case of minor accidents to machinery, requiring two or three hours time to repair, which otherwise would lay off the entire shift, is it permissible to have the engineer make the repairs as over-time, after putting in his eight-hour shift?

2. In the event of one shift requiring say, an extra hour to complete drilling a round of holes, which if not blasted by them would compel the next shift to finish the round and blast at the beginning of the shift and then lay off a considerable time waiting for the smoke and gas to clear, thereby causing them to lose perhaps a half-day and materially delay the progress of the work, is it permissible to allow the first shift to put in the necessary overtime and complete their round?

3. In case one man is unexpectedly unable to go to work, is it permissible to allow a man who has already put in one shift to take his place and put in 16 hours, rather than cause most or all of the force on that shift to lay off?

Section 1941, Revised Laws, reads as follows:

The number of hours of work or labor of mechanics, engineers, blacksmiths, carpenters, top men, and all working men employed or working on or about the surface or surface workings of any underground mine workings, shall not exceed eight (8) hours in any period of twenty-four (24) hours, except in cases of emergency where life or property is in imminent danger.

Section 6554, Revised Laws, reads as follows:

The period of employment of working men in all underground mines or workings shall be eight hours per day, except

of emergency where life or property is in imminent
 ries for the violations of the above mentioned statutes
 provided for in sections immediately therein follow-

of the questions submitted contain any facts in any
 wing "cases of emergency where life or property is in
 t danger." Unless cases exist the period of employ-
 and around mines shall not exceed eight hours per

fore each and all of said questions should be answered

Very truly yours,

WM. McKNIGHT, *Deputy Attorney-General.*

w—Does Not Apply to Mine Watchmen.

CARSON CITY, May 31, 1918.

F. COLE, *Labor Commissioner, Carson City, Nevada.*

I am in receipt of your recent construction of section
 Laws, which provides:

umber of hours of work or labor of mechanics, engi-
 acksmiths, carpenters, top men, and all working men
 l or working on or about the surface or surface work-
 ny underground mine workings, shall not exceed (8)
 cept in case of emergency where life or property is in
 t danger.

e, "Is the above law applicable to watchmen employed on
 surface workings of a mine whether or not the men are
 derground or about the surface of the mine?"

ion of this office such law does not apply to watchmen.

Respectfully,

E. T. PATRICK, *Deputy Attorney-General.*

w—Constitutionality Valid as to Workers in Open-Pit or Open-
 s.

CARSON CITY, June 25, 1918.

F. COLE, *Labor Commissioner, Carson City, Nevada.*

I am in receipt of your favor of the 15th instant, request-
 on relative to the constitutionality of the eight-hour law
 workers employed in open-cut mines, being section 6557,
 s of Nevada, 1912. Said section is as follows:

period of employment of working men in open-cut and
 mines shall not exceed eight hours in any twenty-four
 cept in cases of emergency where life or property is in
 ent danger.

n has had several interpretations by this office and I am
 fied of the constitutionality of this act. You are hereby
 interpretations of the same section appearing in the report
 ey-General for 1915 and 1916, opinion No. 261½ of page

25 of said report and opinion No. 67 of page 57 of said report, wherein the same section was under consideration and its constitutionality upheld as to workers in open-cut or open-pit mines.

Very respectfully,

GEORGE B. THATCHER, *Attorney-General*.

Eight-Hour Law—Applies to Janitors Employed by State, Counties, or Municipalities.

CARSON CITY, October 16, 1918.

HON. ROBT. F. COLE, *Labor Commissioner, Carson City, Nevada*.

DEAR SIR: I am in receipt of your favor of the 11th instant, directing my attention to Section 6778, Revised Laws, which provides:

On public works, all works or undertakings carried on or aided by the county, state or municipal governments, eight hours shall constitute a day's labor.

You state that from personal observation you know that the janitor work carried on by the county of Washoe at the court house is being conducted on a twelve-hour basis and ask a ruling as to whether or not the above mentioned section is applicable to janitor service in the various counties of the State.

In response thereto, let me say that, in the opinion of this office, such action is a clear violation of Section 6778, Revised Laws.

Yours very truly,

E. T. PATRICK, *Deputy Attorney-General*.

Child-Labor—Summary of State Laws With Respect to Classes of Occupation and Hours of Service.

CARSON CITY, July 10, 1918.

HON. ROBT. F. COLE, *Labor Commissioner, Carson City, Nevada*.

DEAR SIR: I have carefully checked over the enclosed memorandum showing conditions under which children may be employed in this State and believe that the same covers all of our statute law on the subject.

Yours very truly,

E. T. PATRICK, *Deputy Attorney-General*.

MEMORANDUM SHOWING CONDITIONS UNDER WHICH CHILDREN MAY BE LAWFULLY EMPLOYED IN THE STATE OF NEVADA

With Respect to Classes of Occupation.

1. *Under 14 Years of Age*—(a) No male child under the age of 14 years shall be employed at any labor whatever, in or in connection with any store, shop, factory, mine or any inside employment not connected with farm or housework, without a permit from the judge of the district court. *Section 6842, Revised Laws, 1912.*

(b) Under no conditions shall children under 14 years of age be employed during the hours which public schools are in session. *Sec. 1, Chap. 232, Stats. 1913.*

2. *14 to 16 Years of Age*—(a) Any child between the years of 14 to 16, both inclusive, will be permitted to work upon satisfactory proof

(1) is mentally unable to learn at school; (2) has completed grade at school; (3) is being taught at a private school; child's labor is necessary for its own or its parents support when residence is located too far distant from school. *Revised Laws, 1912.*

16 Years of Age—(a) No female child under the age of 16 employed at any labor whatever, in or in connection with a mine, factory, or inside employment not connected with agriculture, without a permit from the judge of the district court. *Section 24, Revised Laws, 1912.*

No child under 16 years of age shall be employed in any capacity, or in connection with the preparing of any composition where dangerous or poisonous acids are used, manufacture of paints, or the use of lead; dipping, drying or packing matches; manufacture for immoral purposes; nor in, about, or in connection with coal-breakers, quarry, smelter, ore-reduction works, laundry, warehouse, cigar factory, or other factory where tobacco is cured or prepared, distillery, brewery, or any other establishment where malt or alcoholic liquors are manufactured, packed, or bottled. *Section 2, Chapter 232, Statutes 1913.*

No child under the age of 16 years shall be employed to work in, or in connection with glass furnaces, smelter, or ore-reduction works, outside erection and repair of electric wires, in the running of elevators, lifts, or hoisting machines, in oiling hazardous machinery in motion, at switch tending, gate work, repairing, as brakeman, fireman, engineer, motorman, or on any railroad, in or about establishments where nitro-glycerine, dynamite, guncotton, gunpowder, or other high or explosive materials are manufactured, compounded or stored. *Section 2, Stats. 1913.*

No child under 16 years of age shall be employed in any employment declared by the State Board of Health to be dangerous to life or health or injurious to the health or morals of children under the age of 16 years. *Section 2 and 5, Chapter 232, Statutes 1913.*

No person under the age of 16 years shall be permitted to drive any motor vehicle in any incorporated or unincorporated city of this State. *Section 9, Chapter 181, Statutes 1917.*

18 Years of Age—(a) No minor under the age of 18 years employed: (1) In begging, receiving alms, or in any mendicant practice; or (2) In any indecent or immoral exhibition or practice; or (3) In any practice or exhibition dangerous or injurious to life, health, or morals; or (4) as a messenger for delivering letters, packages, or bundles to any house of prostitution or assignation. *Section 6823, Revised Laws, 1912.*

No person under 18 years of age shall be employed in any incorporated cities and towns no person under the age of 18 employed or permitted to work as a messenger for a telegraph or messenger company in the distribution, transmission or delivery of messages before 5 o'clock in the morning, or after 10 o'clock in the evening of any day. *Section 7, Chapter 232, Statutes 1913.*

With Respect to Hours of Labor.

1. *Under 16 Years of Age*—(a) No boy under 16 years of age shall be employed at any occupation, other than domestic service or work on a farm, more than 48 hours in any one week, nor more than eight hours in any one day. *Section 8, Chapter 232, Statutes 1913.*

2. *Under 18 Years of Age*—(a) No girl under 18 years shall be employed at any occupation, other than domestic service or work on a farm, more than 48 hours in any one week, nor more than eight hours in any one day. *Section 8, Chapter 232, Statutes 1913.*

Hospital Privileges—Employees Entitled to Care When Sick, Whether Such Sickness is Caused by Accident or Otherwise.

CARSON CITY, May 3, 1917.

HON. W. E. WALLACE, *Labor Commissioner, Carson City, Nevada.*

DEAR SIR: I am in receipt of your favor of the 25 ultimo, calling my attention to Section 1943, Revised Laws, and inquiring, under this section, "whether an employee who is compelled to contribute to a company or association for medical care and attention is entitled to such care and attention for an illness other than that caused as a result of an accident. In other words, if an employee is taken ill with typhoid or pneumonia while in the employ of such company or association, is he entitled to medical attention?"

In response thereto let me say said section makes no mention whatever and I am, therefore, of the opinion that any employer of labor who collects such hospital fees is liable for the care and attention of the employee during his illness, whether such illness is caused by accident or otherwise.

Very respectfully,

E. T. PATRICK, *Deputy Attorney-General.*

Appropriations for Labor Commission—Unused Portion of Salary of Labor Commission May be Used for Support of Commission.

CARSON CITY, October 22, 1918.

HON. ROBT. F. COLE, *Labor Commissioner, Carson City, Nevada.*

DEAR SIR: I am in receipt of your favor of the 20th instant, wherein it appears that the legislature for 1917 made an appropriation "For salary of labor commissioner; support of labor commissioner, \$5,000." it further appears that the sum of \$125 still remains in this fund representing the unpaid portion of the commissioner's salary during the year 1917 caused by a vacancy in the office.

You inquire whether this unpaid portion of the salary may be used in the support of the commission.

According to the terms of the appropriation the \$5,000 is liable both for salary and support and it is, therefore, the opinion of this office that the \$125 referred to may lawfully be used for the support of the commission.

Very respectfully,

E. T. PATRICK, *Deputy Attorney-General.*

Commissioner—Has No Jurisdiction to Enforce Wage-Payment Laws.

CARSON CITY, December 5, 1917.

F. COLE, *Labor Commissioner, Carson City, Nevada.*

I am in receipt of your favor of the 4th instant, asking me to act creating the office of Labor Commissioner (Statutes Chapter 203), gives you authority to enforce the laws relative to the payment of wages. Section 4 of said act provides:

The commissioner shall inform himself of all laws of the State for the protection of life and limb in any of the industries of this State, all laws regulating the hours of labor, the employment of minors, and all other laws enacted for the protection of the public and for the protection of employees; and it shall be the duty of the said Labor Commissioner to enforce the laws in the State, and whenever after due inquiry he is satisfied that any such law has been violated, he shall report the facts to the district attorney of any county in which such violation occurred, and it shall be the duty of such district attorney to prosecute the same.

The act governs laws for the protection of life and limb; laws regulating the hours of labor; laws regulating the employment of minors; laws enacted for the safety of the public, and laws enacted for the protection of employees.

Nothing in the act which specifically confers upon the commissioner the power to enforce laws relative to the payment of wages. It is the familiar rule, "the inclusion of one is the exclusion of another." I am of the opinion that the laws which the commissioner is to enforce by the section above quoted are hereinbefore and, therefore, he has no jurisdiction over the enforcement of laws relating to the payment of wages of labor.

Very respectfully,

E. T. PATRICK, *Deputy Attorney-General.*

Commissioner—Duty to Enforce the Hours of Service Law for Women.

CARSON CITY, May 3, 1918.

F. COLE, *Labor Commissioner, Carson City, Nevada.*

Your recent letter, with reference to the enforcement of the law relative to the hours of labor for females, duly received. You mention to various statutes, and request to be advised—whether or not the authority for enforcing the hours of labor for females is a dual authority, whether it is joint with the attorney-general, or whether the attorney-general has exclusive jurisdiction in the enforcement of this law."

The law in question (Chapter 14, Statutes 1917) reads as follows:

The district attorneys of the respective counties of this State, and the attorney-general of the State, shall enforce the provisions of this act, and said district attorneys, and said

attorney-general and their deputies and agents, shall have all power and authority of sheriffs or other peace officers to make arrests for violation of the provisions of this act, and to serve all processes and notices thereunder throughout the State.

By section 4 of the act creating the office of Labor Commissioner (Chapter 203, Statutes 1915) it is provided that such officer—

Shall inform himself of all laws of the State * * * regulating the hours of labor, * * * and it shall be the duty of said Labor Commissioner to enforce all such laws in the State, and whenever after due inquiry he shall be satisfied that any such law has been violated he shall present the facts to the district attorney of any county in which such violation occurred, and it shall be the duty of such attorney to prosecute the same.

These two sections should be read and construed together and effect should be given to each, conforming to the apparent legislative intent.

The Labor Commissioner is charged with the duty of enforcing all labor laws relative to hours of employment, including the hours of service law for women. The facts in connection with the violation of the latter law should be presented by you to the district attorney of the county wherein the violation occurred or to the attorney-general, when it becomes the duty of either or both of such officers to prosecute such violation.

Very truly yours,

WM. MCKNIGHT, *Deputy Attorney-General.*

Labor Commissioner—Duty of Labor Commissioner to Bring Complaint Against Employers Who Fail to Pay Wages Due Workmen.

CARSON CITY, May 31, 1918.

HON. ROBT. F. COLE, *Labor Commissioner, Carson City, Nevada.*

DEAR SIR: I am in receipt of your recent letter in which you state that you have had several complaints alleging violations of Section 1, Chapter 276, Statutes of 1913, page 448.

You also call my attention to Section 13, Chapter 203, Statutes of 1915, page 314, as follows:

It shall be the duty of the district attorneys of the several counties upon the complaint of the Labor Commissioner, to prosecute all violation of law which may be reported to said district attorneys by the Labor Commissioner.

You inquire whether or not the Labor Commissioner has the power to invoke the services of the district attorneys of the several counties of this State in an attempt to enforce the provisions of Section 1, Chapter 276 (above mentioned), in such cases which may have been referred to him by employees who have wages due them.

It is the opinion of this office that under the provisions of Section 13, it is the duty of the district attorneys of the several counties upon your complaint to prosecute all violations of Section 1, Chapter 276, Statutes of 1913, which may be brought to their attention by you.

Yours respectfully,

E. T. PATRICK, *Deputy Attorney-General.*

E. DECISIONS OF THE STATE SUPREME COURT AFFECTING LABOR 1916-1917

Employers' Liability—Assumption of Risk—Misleading Instructions to Jury.
Peter Zevalin v. Tonopah Belmont Development Company; Second Judicial Court, Washoe County. (39 Nev. p. 1.)

Peter Zevalin was injured by falling rocks while working on the 1300-foot level of a mine in Tonopah. He had changed his place of employment within the mine by direction of the company, and after drilling one hole and about a couple of inches in another one a rock slid down and injured him. He was taken to the surface and given "first aid" by a doctor called by the company and against whom the injured workman complained as being incompetent. Suit was brought in the Second Judicial Court of Washoe County to recover damages for the personal injuries received, and for the negligence of the company in furnishing an unskilled physician to give "first aid" treatment. A jury brought in a verdict for the plaintiff.

The company appealed the case to the Supreme Court of the State on the grounds that plaintiff assumed the risk when he changed his place of employment; that the court erred in sustaining plaintiff's objections to defendant's Exhibit 3, which was a set of rules promulgated and posted at the mine several months after the injury, by the State Mine Inspector; and, that erroneous instructions were given to the jury. The Supreme Court held that a prejudicial error was committed by the trial court, and ordered that the case be reversed and a new trial granted. Judge Coleman, who delivered the opinion of the court, said in part:

If the rock which injured plaintiff was loose and dangerous when he went to the station on July 21 to go to work, and was not in fact loosened by the very work which the plaintiff was doing, plaintiff would, beyond doubt, be entitled to recover. Plaintiff testified that the shots which he put in on July 21 were not loaded heavily enough to loosen the rock ten feet away. The question is: Was the rock which slid down and injured the plaintiff loose and dangerous before he went to the station to work, or did he make it loose and dangerous by the work which he did? If it was the former, the defendant is liable; if the latter, the plaintiff cannot recover. Under the evidence in the case it is not a question of law for the court to determine, but one of fact for the jury.

We think instruction No. 10 should not have been given. It undertakes to instruct as to the fellow-servant doctrine. There is no evidence in the case upon which to base such an instruction. If it were shown that a fellow servant had made the station and left it in a dangerous condition, the instruction would be applicable; but there is no such evidence. So far as appears from the evidence, the station was made long prior to the time when plaintiff went to work in the mine.

In the opinion of this court, instruction No. 13 should not have been given. The evidence does not show that the timbering was done in the manner in which it was for the purpose of saving money. While it may have been economical to put in the timbers in the manner in which they were, testimony to that effect is very far from saying that they were put in as they were because it was cheaper to do it in that manner. There was no evidence upon which to base the instruction.

Employers' Liability—Effect of Compromise Settlement—Validity of Release when Made Outside the State. William O. Leach v. Mason Valley Mines Company; Second Judicial Court, Washoe County. (40 Nev. p. 143.)

William O. Leach was injured while in the employ of the Mason Valley Mines Company, in the county of Lyon, State of Nevada. He made a compromise settlement of the claim for damages after he had

removed to the State of California and accepted the sum of \$2,175 as full settlement of the claim. The release which he signed was in the following language, to wit: "San Francisco, December 11, 1912. Received of Mason Valley Mines Company the sum of two thousand one hundred and seventy-five dollars (\$2,175), in consideration whereof I hereby release and forever discharge the said Mason Valley Mine Company, its successors and assigns, from any or all claims or demands, actions and causes of action, and liability of every kind and nature whatsoever for, upon or on account of or by reason of any loss, damage, injury or liability sustained or which may be sustained by me in consequence of injuries received by me, the undersigned William O. Leach, on or about the 3d day of March, 1912, in the Mason Valley Company Mines in the State of Nevada, resulting in loss of limb, and eyesight and other injuries. Signed—W. O. Leach." The jury brought in a verdict in favor of the defendant.

The plaintiff appealed the case to the Supreme Court of the State on the grounds that the alleged release comes within the provisions of Section 5652, Revised Laws, and cannot constitute any defense in bar of the injured workman's cause of action; that the allegation that the release was executed in the State of California makes no difference, because the employment, the injuries, and the action were all in Nevada and the law of the latter must govern; that the alleged release attempts to set up a contract which is contrary to the policy of the State. The Supreme Court affirmed the decision of the lower court and denied the petition for a rehearing. Reasons for sustaining the decision are contained in the opinion delivered by Judge Norcross from which the following excerpt is taken:

The only question necessary to consider in this case, we think, is whether appellant is bound by the compromise and settlement of his claim for damages made by him with respondent in the State of California. It is the contention of appellant that the settlement made by him with respondent in the State of California cannot be interposed as a complete defense to his action by reason of Revised Laws, 5652, which provides: "That no contract of employment, insurance, relief benefit, or indemnity for injury or death, entered into by or on behalf of any employee, nor the acceptance of any insurance, relief, benefit, or indemnity by the person entitled thereto, shall constitute any bar or defense to any action brought to recover damages for personal injuries to, or death of such employee." This provision of our statutes was sustained in *Lawson v. Halifax-Tonopah M. Co.*, 36 Nev. 591.

We concur, however, in contention of respondent that this provision of our statute can have no application in this case, for the reason that appellant's cause of action was transitory. Such a cause of action follows its owner and may be sued upon in any State where jurisdiction of the defendant can be secured. As appears from the records in this case, appellant was at all times a citizen of the State of California. Such settlement was in accordance with the laws of the State of California and was a complete bar to any action which might be instituted in that State to recover damages for such injuries.

Mechanics' Liens—Time for Filing—Verbal Waiver of Lien. *J. E. Gaston v. Mary Avansino, as Administrator of Estate of Louis Avansino, Deceased, and others*; Second Judicial District Court, Washoe County. (39 Nev. p. 128.)

J. E. Gaston was employed to remodel a building and commenced work thereon about November 11, 1912. From time to time changes were made in the original plans by the owner which caused temporary cessation in work. The last item of work was performed about eight months later, in June, 1913, when a screen door was furnished and hung

plaintiff failed to secure payment for his labor and filed a lien against the property. Judgment was secured for the plaintiff and defendant was denied a motion for a new trial.

The plaintiff appealed to the Supreme Court of the State from the order denying a motion for a new trial, on the ground that the court erred in finding that the lien had been filed at the time required by law, and that an agreement between the plaintiff and the defendant was not claim or file a lien in waiver of the right to a lien. The supreme court affirmed the order of the lower court in both the judgment and the order denying a new trial. The following is quoted from the somewhat lengthy opinion of the court, which was delivered by Judge McCarran:

The services performed and the material furnished were performed and furnished in time to time to suit the convenience of the lessee of the building. The changes and alterations made in the interior of the building and many items of material furnished by him were not taken into consideration or contemplated at the original making of the contract. It is an unusual thing in bringing about alterations and changes in buildings where the building has in the past been used for some particular purpose. A new business about to be installed therein requires different services many of which cannot be reasonably foreseen at first. Treating the contract as a continuing contract, the filing of the lien notices within the time after the completion of the last services performed by respondent is not dependent to a lien for the whole, less the sum total of the amounts

paid. It is the propriety observe in passing that, as a general proposition of law, a lien will not be inferred from doubtful expressions; and, in many authorities, where the terms of the agreement are ambiguous on the question of release, the doubt should be resolved against the plaintiff. Between the testimony of the respondent and that of the appellant there is a sharp and distinct conflict. The trial court had opportunity to observe the conduct and demeanor of the several witnesses on the stand, and in observing and listening to the testimony given, found against the plaintiff here. In this instance, not only is there a substantial testimony, but there is a substantial evidence upon which the court in this respect may be supported, for which reason we will affirm the same.

Liens—Jurisdiction of Justice Court—Manner of Posting Notices.

Phillips v. Snoden Placer Company and others; Fifth Judicial District Court, Nye County. (40 Nev. p. 66.)

Phillips brought suit in the Justice Court of Manhattan to foreclose a lien. Two other persons who also held claims joined to intervene. A verdict was returned in favor of the plaintiff and a judgment was entered in favor of Phillips for \$200, also of \$260 in favor of Amedeo, also for the sum of \$255 in favor of O. Dahlstrom. On appeal to the district court it was found that a judgment be entered in favor of the above persons for the amounts named. Defendants were denied a motion for a new trial.

The plaintiff appealed to the Supreme Court of the State from the order denying a new trial, on the grounds that the court had no jurisdiction of the three liens the aggregate amount of which was more than \$300; that the district court cannot take jurisdiction of a case of which the justice court had no jurisdiction. The law does not require the maintenance of the nonliability of the plaintiff the entire time that the work is being carried on. The supreme court affirmed the decision of the district court, but modified

the allowance by striking out the allowance of cost in the justice court. The opinion was delivered by Judge Norcross, who said, in part:

It is contention of counsel for appellant that the language of the constitution does not contemplate the conferring of jurisdiction upon justices' courts of an action to foreclose two or more mechanics' liens where the aggregate amount of the liens exceeds \$300, notwithstanding each of the several liens sought to be foreclosed in an action is for an amount less than \$300. We agree with contention of counsel.

This is not a case of an attempt to confer by consent jurisdiction of a subject matter beyond the court's jurisdiction. Rather it should be regarded as a waiver of any technical objection which might have been raised as to the manner of acquiring jurisdiction. Where parties, without objection, proceed to the trial of a case, the subject matter of which is in the original jurisdiction of the court, the rule of estoppel ought to apply against a subsequent questioning of jurisdiction. The modern tendency of courts is to break away from technical rules of practice. The sooner many rules, around which are encircled the halo of time-honored recognition, are modified, restricted, or entirely discarded, the sooner will courts perform the real function for which they were created—the adjudication of controversies between litigants upon their real merits.

The statute says a notice shall be posted "after" knowledge of the construction or intended construction, etc. Assuming, however, without deciding, that a prior notice would meet the requirements of the statute, we are clearly of the opinion that persons employed after the destruction of such notice ought not to be bound thereby, where it appears that the work contemplated necessitated a destruction of such notice.

It will not do, however, to say that the mere posting of any sort of a notice in a conspicuous place complies with the law. A notice might be posted, so written that it would not remain intelligible for a day. Such notice manifestly could not be held to comply with the law. The purpose of the statute is to give actual notice. A notice written in lead pencil on a piece of cardboard, or upon a piece of paper which had been exposed to the elements, might in every respect comply with the statute. If, however, it was so posted that any person of ordinary common sense would know that it would in a few days be effaced from exposure to the elements, a court would be justified in holding such a posting not to be a compliance with the law.

Workmen's Compensation — Compensation Denied — Mandamus Not Proper Remedy. State of Nevada, ex rel. Ernest E. Brown v. Nevada Industrial Commission; Original Proceedings in Mandamus. (40 Nev. p. 220.)

Ernest E. Brown was employed as an engineer and millman in the operation of a quartz mill near the town of Round Mountain, Nye County, and while so employed he was accidentally injured by the machinery of said mill, resulting in the loss of three fingers from his right hand. His employer had never lawfully rejected the terms of the act relating to compensation to injured workmen, but had neglected to pay any premiums whatever to the industrial commission. Claim was presented to the commission but an award was denied on the grounds that the employer had not contributed to the state insurance fund provided for in the act. A question arose as to the proper remedy at law. Counsel for both sides filed a brief before the Supreme Court of Nevada contending that mandamus was the proper remedy in this case.

In passing upon the question before them the Supreme Court ruled that the petitioner having an ample remedy at law, proceedings in mandamus are not available. In delivering the opinion of the court, Judge Norcross said in part:

While the transcript of the proceedings before the respondent commission may have no proper place in determining the questions raised upon the demurer to the petition, it is proper, we think, to refer to the same as illustrating the reason why mandamus is not an appropriate remedy to enforce a rejected claim presented to such commission. Necessarily, the claim of an employee, rejected in whole or in part by the industrial commission upon any question

of fact going to the extent of his injuries or as to the existence of relationship of employer and employee at the time of the accident, must be determined in an action at law against the commission. Many cases arise in which disputes between litigants are based simply upon a difference of contention as to a matter of law. Our statutes provide for a simple method of submission of such controversies to the district courts.

In the administration of the important duties imposed upon the Nevada Industrial Commission, that commission will doubtless often be required, as it interprets its duty, to reject claims in whole or in part, and both upon questions of fact and law. If a claim is finally rejected in toto, that is the end of it so far as the commission is concerned, unless a judgment is obtained against the commission in a court of competent jurisdiction, in which event the judgment will have the force of an allowed claim. Should the commission refuse to pay such final judgment, mandamus would be an appropriate remedy.

It was never intended that this court, through the agency of some extraordinary writ, should be made the instrument for furnishing legal advice to boards, commissions, and officers. Petitioner has or has not a legal claim against the respondent commission. A district court is the proper forum to determine the legality of his claim, and, if a legal claim, the amount he is entitled to recover under the statute. If, after a judgment in the district court, either party is dissatisfied with such judgment, the remedy of appeal to this court is available.

PART V

**MEDIATION AND CONCILIATION OF LABOR
DISPUTES IN NEVADA**

1917-18

MEDIATION AND CONCILIATION OF LABOR DISPUTES IN NEVADA

AUTHORITY FOR MEDIATION

work performed by the Labor Commissioner, as a result of
ed by law, or otherwise, the services of mediation and con-
labor disputes may reasonably be regarded as the most
The duty of acting as mediator is not directly conferred
ic act which creates the Labor Commission, but authority
g such work is delegated by the Governor under the pro-
tection 1929, Revised Laws, which read:

ever a controversy concerning wages, hours of labor,
tions of employment, shall arise between an employer
employees, seriously interrupting or threatening to
t the business of the employer, the Governor shall,
quest of either party to the controversy, with all prac-
cedition, put himself in communication with the parties
controversy, and shall use his best efforts, by mediation
ciliation, to amicably settle the same. He may either
such powers of conciliation himself or appoint a
ioner for that purpose.

e past year the services of the Labor Commissioner have
in the work of mediation and conciliation in all of the
within the State. Cooperation and assistance has been
particular cases by the Governor and the federal commis-
nciliation, but in the major portion of the cases the Labor
r has acted alone under authority from the Governor.

Peaceful Adjustments Desired by Capital and Labor

y of the State and Federal Governments, particularly dur-
d of the war, for a full production from every industry,
many representatives of both employers and employees in
stations of patriotism to accept the services of a mediator
the time worn policies and prejudices which they have
many years. In nearly every instance this broadminded
sulted in paving the way for more friendly relations and
ew of their respective rights. Employers have discovered
mental activity does not necessarily mean expert assistance
ers, but rather that it acts as a preventative for radical
defense against unreasonable demands; on the other hand,
und that the processes of mediation deprives them of no
ats, but enables them to conduct negotiations much further
ordinary circumstances, and oftentimes results in a better
g and a greater consideration by the employer for the
s of employees. In short, both sides have something to

been an unconscious realization, or at least an unspoken
or many years that strikes and lockouts should be avoided.
to have taken the terrors of a great war to make capital and
he same time the need of a tribunal of final resort. Under

this pressure there has been established for the nation a National War Labor Board endorsed by the representatives of capital and the representatives of labor to serve for the period of the war. Here in the State of Nevada a group of representative labor leaders assembled in Reno at a conference held May 17, 1918, and speaking for the organized forces of labor in this State, adopted a resolution urging that during the period of the war a power be created to bring about a "settlement by mediation and conciliation of every controversy arising between employers and workers in the State of Nevada." Out of this experience and growth of thought there will surely grow some plan which will work in peace times.

There is already in existence a variety of boards and commissions many of which constitute permanent and separate bodies for the settlement of trade disputes. The United States Board of Mediation and Conciliation, commonly known as the Newlands Act, has jurisdiction in all cases relating to interstate railroads and their employees. No less than 36 States have passed legislation on this subject, but in no cases can arbitration be entered into except on application of the contending parties. For the four years ending June 30, 1917, the United States Board of Mediation and Conciliation adjusted 71 controversies affecting substantially all employees engaged in the movement of trains. The latest report of the Department of Labor shows that the federal commissioners of conciliation were called upon to mediate in 254 cases during the 30-day period from July 17, 1918 to August 16, 1918.

There is no reason why this spirit of cooperation between the government, the employers and the wage-earners cannot be maintained through the trying days of the reconstruction period. The best thought of the State and Nation should be enlisted in the solution of this far-reaching question in order that no injustice may come to those who are vitally concerned. In the opinion of the writer one of the essential conditions of securing a permanent improvement in the relations between capital and labor is that there should be adequate organization on the part of both the employers and the employees; such organization is necessary to provide means whereby the arrangements and agreements may be effectively carried out. Likewise, in order to maintain the fullest measure of success in the settlement of labor disputes, it is not only desirable but absolutely necessary that the composition of boards and commissions, which are to consider the vital questions arising between employers and work-people, that there should be equality of representation between the employers and wage-earners.

Many Disputes Successfully Adjusted

The number of labor disputes calling for mediation increased largely during the period of the war, due probably to the necessity for wage revisions to meet the constantly increasing cost of living. Approximately 12 cases required the attention of the present Labor Commissioner since his entry into office on December 1, 1917, some of which attracted particular attention because the industries were closely connected with war activities. Among the most prominent might be mentioned the periodic outbreaks of trouble between the Nevada Consolidated Copper Company and its employees. Lack of responsible organization on the part of the workers and opposition to collective bargaining and recognition of committees on the side of the company made it a

difficult task to secure a permanent or conclusive peace. Fortunately, by a splendid spirit of cooperation this condition was overcome and the great copper industry in this State was permitted to continue without serious interruption. The other cases, while of great importance, involved a less number of men and were as a general rule more easily disposed of.

The success which has attended the commissioner's efforts in this direction has been most gratifying despite the fact that the meagre appropriations for this department occasioned temporary embarrassment and greatly handicapped effective work. It would be impossible to state in terms of money value what the services of mediation have saved to the industries, the wage-earners, and the people of Nevada during the past year; but more valuable still is the absence of that unpleasant notoriety and the attending excitement and uneasiness, together with the loss of human lives, which characterized former disturbances in Nevada, Colorado, Arizona, and other Western States, in recent years.

Proposed Arbitration Ignored by One Company

It is to be regretted that this report must refer to one case in contrast to those in which settlements have been made. This condition is not uncommon, however, and is due in some instances to the unconciliatory disposition of the persons involved and sometimes to the firm-fixed policy of interests that are prejudiced against what they are pleased to term "outside interference." The only instance in which the final proposition of arbitration was entirely ignored occurred with the Goldfield Consolidated Mines Company at Goldfield following a strike of the miners at that place. This case which is covered more fully below presented a somewhat perplexing problem to the company, and seemed to involve in a peculiar way the very existence of a community, but there is no question that a submission to a fair-minded board of arbitration would have been the proper procedure, and that it would have resulted in the settlement in which the industrial interests of both sides would have been fostered.

Policy of Commission in Labor Disputes

The sole purpose and policy of the Labor Commission of this State in the adjustment of controversies brought to its attention has been to secure a settlement and maintain industrial peace without the stoppage of work. The work of mediation is in no sense judicial; that is to say, it is not a matter of hearing the testimony from both sides and then determine the case from what might appear to be the rights and wrongs of the situation. The work is, more properly speaking, one of a diplomatic nature whereby effort is made to find some basis of adjustment which will be acceptable to both sides. The end sought is a full understanding and a mutual acceptance of the terms of settlement which is found to be most nearly agreeable to the conflicting interests. Upon failure to find this common ground upon which settlement can be effected, a final proposition is made that the disputed points be submitted to a board of arbitration.

Review of Cases Handled

The following pages give a brief history of the cases which came to the attention of the Labor Commission and regarding which some action was taken. In this necessarily compact summary no attempt is

made to reproduce the voluminous correspondence and hearings by which the contending parties attempted to justify their positions in the controversy. Space will only permit a mere statement of the case in the simplest form such as a mention of the parties involved, an outline of the demands, and abbreviated terms of the settlement reached.

1. Violation of Eight-Hour Law. Nevada Consolidated Copper Company. at McGill.

For several years there has been on the statutes of the State an hours-of-service law which applies to workmen in open-cut and open-pit mines. This law expressly limits the hours of work to eight per day, except in cases of emergency where life or property is in imminent danger. In the month of May, 1917, the train and enginemen employed by the Nevada Consolidated Copper Company petitioned the company to comply with the law, and at the same time requesting that the compensation theretofore paid for ten hours be not reduced. This the company refused to do and the violation was thereupon called to the attention of the Labor Commissioner with request to enforce the law. The Commissioner visited the Ely Mining District and made an investigation of the situation and found the men divided upon the question of enforcing the law. No definite action seemed advisable at that time but the situation gradually grew worse until in July 1917, a strike was threatened, whereupon the matter was again taken up. Representatives of the state and federal government went to Ely and, after a number of conferences had been held a letter was addressed to the company requesting that, inasmuch as the men had voted in favor of the eight-hour day and the state law declared that eight hours shall constitute a day's work, the company should grant the eight-hour day and bring the controversy to a close. The answer of the company officials to the letter was to the effect that they would recommend immediately to the home office at New York the granting of the eight-hour day to their employees. With that understanding the case was terminated satisfactorily and the eight-hour law complied with.

2. Strike Account Dismissal of Employees—Employees of the Nevada Packing Company, at Reno.

E. E. Fontaine, a butcher foreman, employed by the Nevada Packing Company, was discharged by the company on December 4, 1917. After failure to secure his reinstatement the members of the Butcher's Union voted to call a strike and walked out on December 4. It was claimed by the company that Fontaine was discharged for some violation of the rules and that reinstatement was refused because he intended to quit in a few months to work on a farm at Fernley, and that it was possible at this time to secure a man to take his place. The men claimed that the dismissal was due to Fontaine's activity in organizing the Butchers' Union. After two or three days of cessation of work the Reno Central Trades and Labor Council brought the strike to a close by agreeing with the company that the question of reinstatement of three men, E. E. Fontaine, Geo. Fontaine, and J. Gray, would be referred to a board of arbitration. Under this agreement work was resumed on December 7, 1917. In compliance with the terms of the settlement the Labor Commissioner called the board of arbitration in session on December 17, and after hearing testimony from both sides the board, on the following day handed down a decision which provided that

mine would be reemployed without prejudice at his former beginning Wednesday, December 26, 1917, and that E. E. J. Gray should not be reemployed.

Provide Employment—Utah Construction Company, at Construction North of Reno.

On December 17, 1917, the District Attorney of Washoe County advised the Labor Commissioner that there was prospect of serious trouble in connection with the failure of the Utah Construction Company to provide employment for men shipped to them from the employment agencies in California and Nevada. Upon arrival of a large number of men were assembled and had complaints against the construction company on account of failure to receive work. A meeting was arranged at which the Labor Commissioner had the complaining workmen and the superintendent of the company. The men claimed they had been refused employment at the company even though they held employment orders for work. The superintendent claimed that an excessive number of men had been shipped that through misunderstanding the foreman had failed to arrange extra work to accommodate the shipment. After a thorough discussion of the matter a satisfactory settlement was reached which provided that all men were to be immediately furnished with employment for the time which they were obliged to lose while waiting for adjustment. Approximately \$150 in lost time was paid to the company and the company agreed to avoid such occurrences in the future.

Wage Increase—Train and Enginemen in Open-cut Pit, at Ruth.

On March 20, 1918, the engineers, firemen, and switchmen, employed by the Nevada Consolidated Copper Company in the open-cut pit at Ruth, were in the service of the company on account of failure to secure a wage adjustment. About 90 men were involved in the strike. All of the engines used for hauling ore out of the pit were stopped. The company threatened a lockout by declaring that it would make no effort to operate the mine. The men telephoned the Governor who, in company with the Labor Commissioner, went to the mine. Ely, arriving at the scene of trouble on March 21, 1918, held a conference with representatives of the men and with the manager of the company with a view to continuing operation. The men appeared to be a request for 50 cents per day wage increase as the settlement of some minor complaints. In the beginning the men stood steadfast and no mutual agreement seemed possible. The strike was continued until March 25th, at which time a settlement was reached and the men returned to work in the open-cut pit without prejudice or loss of former rights. The basis of return was provided that the wage complaint would be taken up for consideration and that some kind of machinery would be provided for handling of complaints. In accordance with this agreement the Labor Commissioner and a federal commissioner of conciliation met on April 23d and opened the negotiations for the settlement of the men's demands. On April 30th a satisfactory settlement was reached between the company and the men, which provided for 30 days' work per month, and the payment of one-half day of idleness per month.

5. **Recognition of Workmen's Committees**—Nevada Consolidated Copper Company, at McGill.

Growing out of the strike of the train and engine crews employed by the Nevada Consolidated Copper Company at Ruth was an agreement to establish some kind of machinery for the handling of future grievances. In accordance with this agreement the Labor Commissioner and a representative of the federal department went to Ely and made a survey of the situation with the object of establishing friendly relations and a workable agreement between the company and its employees. Conferences were held with representative committees from the various departments of the company and with the general manager. The company did not disagree with men who belonged to unions, but stated it as a condition for their company to not recognize union committees, although it would deal with committees of employees when they had some place before the management. The men claimed that committees selected for special occasions were inexperienced and unsatisfactory and desired a more elaborate and better organized committee for the handling of their affairs. The company finally agreed to recognize workmen's committees, selected by the employees, in the adjustment of future complaints. A plan was worked out which proved to be agreeable to both sides, and it is herewith reproduced in full for the information and guidance of those who have similar problems to solve.

First. (a) The Nevada Consolidated Copper Company, through its General Manager, will recognize general workmen's committees representing employees of all sub-departments, one committee to be known as the "General Workmen's Committee of the Mining Department," and the other to be known as the "General Workmen's Committee of the Smelter and Concentration Department," each committee to be selected from and by the men actually employed by the company.

(b) These committees shall consist of one representative from the various crafts or units, i. e., the metal trades, building trades, millmen, steam miners, steam shovelmen, train and enginemen, laborers, etc., to be selected at a mass meeting to be called by the employees of each class or unit, September 1, the first day of May, 1918, or as soon thereafter as convenient.

(c) At such mass meetings a local committee shall be selected consisting of three members whose duty it will be to consider original grievances.

(d) The member receiving the highest vote at unit meetings shall be declared the chairman of the local committee and a member of the general workmen's committee covering his particular department.

(e) Vacancies on the local committee shall be filled by mass meetings of the general workmen's committee in the same manner, by the class wherein the vacancy occurs.

Second. (a) When an individual complaint is brought to the attention of the chairman of a local committee in writing, the chairman shall first attempt to bring about an adjustment between the worker or workers and the management of the department in which he or they work.

(b) Failing in that it may be taken up by the local committee. If the grievance is meritorious or of such a general character as to affect the employees as a whole, it shall be presented to the General Manager of the Nevada Consolidated Copper Company by a sub-committee of three, to be selected from the general workmen's committee of the proper department.

(c) If no adjustment is effected thereby the sub-committee shall refer the matter to the general workmen's committee. Thereupon, the general workmen's committee shall determine by a majority vote the advisability of presenting the grievance, other than wage, to the Secretary of Labor at Washington by telegraph. Upon receipt of the information the Secretary of Labor shall appoint a United States Commissioner of Conciliation to act jointly with the State Labor Commissioner of Nevada in an endeavor to adjust the

basic principles to be observed by the Federal Commissioner of and the State Labor Commissioner shall be those adopted by the conference Board under date of March 29, 1918, and approved by action by proclamation under date of April 10, 1918, creating the Labor Board.

Where a grievance arises involving a question of wages, the men's committee, failing to make a settlement in the manner here prescribed through the general manager of the Nevada Consolidated Company, may by a majority vote present the disagreement to the Secretary at Washington, D. C., by telegraph. Upon receipt of the information the Secretary of Labor will appoint a U. S. Commissioner of Conciliation with the State Labor Commissioner of Nevada who will immediately negotiate with the General Manager of the Nevada Consolidated Company in an endeavor to adjust the controversy.

In such effort, the joint state and federal commissioners will file a report with comparative data on wage scales of other companies in the United States, and such other data as may be pertinent, concerning property affected and forward same to the Secretary of Labor and transmittal, if deemed advisable, to the National War Labor Board for adjustment. The General Manager of the Nevada Consolidated Company shall be notified of the date the report in question is transmitted. The Secretary of Labor in order that the Company representatives be kept brief thereon if desired.

Adjustment—Transportation Employees on Virginia and Truckee Railroad, Carson City.

In May, 1918, the transportation employees of the Virginia and Truckee Railway submitted a proposed joint agreement between the employees of the Virginia and Truckee Railway and the joint company representing train and engine employees on that road. The proposal provided for the eight-hour day, together with other conditions, and for rates of pay equivalent to those prevailing in the territory at that date. On June 1st a conference was held between the management and the men. The management did not desire to sign a written agreement and said it would be impossible to schedule to eight hours per day. The employees wished specific in the way of rules and regulations governing pay, and general working conditions, and particularly desired a reduction of the hours of service which in some instances was as much as ten hours per day. An agreement was finally reached on the 15th and the company advanced the rates of all employees one cent per day. Assurances were given that material reductions would be made in the hours of service.

of Wage Increase—Miners' Union v. Mining Companies at Virginia City.

In the latter part of May 1918, the Miners' Union at Virginia City, in order to reach satisfactory settlement through conference, voted to make an effort to enforce their demands. On instructions of the Secretary of Labor Commissioner went to Virginia City to endeavor to bring about an adjustment of the differences without a cessation of work. A conference was arranged whereby all parties concerned met at Carson City on May 23, 1918. It was found that the management had granted a partial increase in wages but the men did not feel the mines could be made to pay if any greater increase was paid. The men stated that their original demands had been taken into consideration and that the increase asked for was not paid by the larger and more prosperous mines in the

State. After a general discussion of the whole matter it was agreed that the question of wage increases would be left to a board of arbitration. In accordance with this plan an arbitration board of five members was selected from among those present at the conference, and after a brief session the board handed down a decision awarding the miners an increase of one dollar per day, effective at once.

8. Arbitration of Wage Increase—Mechanics' Union v. Mining Companies, at Virginia City.

In the month of June, 1918, the Mechanics' Union at Virginia City took up with the mining companies at that place the question of an increase in pay to meet the advanced cost of living. After several conferences and the exchange of letters it seemed apparent that the two parties could not agree upon a settlement. The matter was referred to the Labor Commissioner of the State and the federal commissioner of conciliation who was in the vicinity at that time. Meetings were held in the courthouse at Virginia City on June 4, 1918, and after a general discussion of the points at issue both sides agreed to refer the case to a board of arbitration. Accordingly a board of five members was selected which met and considered all of the evidence in the case and made an award giving the mechanics an increase of one dollar per day, effective June 4, 1918.

9. Working Preparatory Time—Nevada Consolidated Copper Company, at McGill.

Under date of May 12th the Labor Commissioner received a wire from the employees of the Nevada Con. Copper Company complaining that they were being required to work during the thirty minutes previous to commencing their eight hours' work. This dispute was taken up with the management by the Labor Commissioner and after a general review of the situation it was agreed that such practice would be a violation of the State law regulating the hours of service per day, and the general manager issued orders that the practice should be discontinued.

10. Strike for Wage Increase—Employees of the Goldfield Consolidated Mines, at Goldfield.

On June 20, 1918, the employees of the Goldfield Consolidated Mines Company of Goldfield made a request for an increase of pay of one dollar per day. Conferences were held between a committee representing the men and the management of the company. No agreement could be reached and the men went out on strike June 25th in an effort to secure a fair adjustment. After the strike had been in progress for a short period the Governor directed the Labor Commissioner to go to the scene of trouble and endeavor to make an adjustment. The Labor Commissioner arrived in Goldfield on July 2d and immediately met committees from the employees and the general manager and superintendent of the company. The management contended that the mines would not permit any increase in pay and that it would be necessary to discontinue operation if any advance was granted in the wage rates. The men showed that the rates of pay were far below that of any other mining camp in the State and urged their demands on the grounds of increased cost of living. Conferences were continued until it seemed useless or hopeless to secure a mutual agreement between the parties themselves. As a final effort to bring the strike to an end, the Labor

er proposed arbitration and addressed the following communication to the contending parties:

At GOLDFIELD, July 6, 1918.

W. L. HAN, *General Manager, Goldfield Con. Mines Co., Goldfield, Nevada.*
 J. H. OLSON, *Chairman, Workmen's Committee, Goldfield, Nevada.*

Sir: By direction of the Governor I have made a complete investigation of the controversy existing between the Goldfield Consolidated Mines and its employees, and attempted to bring about a settlement, but without success. I have made a determined effort to adjust the matter by mediation and the situation remains unchanged and no voluntary agreement seems

possible under the circumstances and in compliance with the provisions of Section 10 of the Laws of Nevada, both parties to this controversy are most respectfully requested to submit the differences now existing to a board of arbitration as provided in the provisions of the state law as contained in an act entitled, "An Act to provide for the amicable adjustment of differences that may arise between employers and employees." The acceptance of arbitration by both parties to this controversy is a mutual understanding and agreement that all employees who leave the service of the company are available will immediately report for work and that hearings shall be held not later than 15 days after resumption of work.

The Labor Commissioner possesses no lawful power to enforce arbitration and the consent of both parties is necessary in order to proceed under this plan. With this understanding I very earnestly urge upon both of you to utilize the means provided for the adjustment of industrial disputes.

It is no beneficial purpose here to multiply words in detailing and reasons which might be assigned in behalf of the principles of arbitration beyond stating the general proposition—sanctioned, I believe, by the experience of the world—that no man whose cause is just need fear the result of a board of arbitration, and that those who insist upon settling industrial conflicts at this time by a matching of forces, cannot expect the support of right-thinking men, for the reason that they are acting unconsciously or unconsciously, from the Nation's power to successfully wage war for human liberty.

I communicate your decision on this proposition by wire not later than July 8th, if possible, to the undersigned at Carson City, Nevada.

Yours very truly,

ROBT. F. COLE, *Labor Commissioner.*

On July 7th a telegram was received from Mr. Gholson saying that the company had agreed to comply with the request contained in the communication of July 6th and accept finding of board of arbitration. The company did not give the courtesy of reply and failed to answer a telegram on the subject, which of course is equivalent to a rejection of arbitration proceedings. Thus it will be seen that the attitude of the company precluded all possibility of conciliatory adjustment and the case was carried no further.

Wage Increase—Shopmen of Nevada Northern Railway, at East

Elko. Men employed by the Nevada Northern Railway Company at East Elko presented demands to the company early in July for an increase in pay. Failing to secure a satisfactory adjustment through negotiations the men involved voted to strike. The result of that action left the service of the company at 12 men on July 15th. The Labor Commissioner arrived in Elko the following day, being delayed in Reno a short time on account of important duties in connection with the State Exemption. He immediately began to investigate the situation and hold conferences with representatives of both sides. The following day a tem-

porary agreement was reached which provided among other things the following: (1) All men now on strike to return to work immediately without loss of time; (2) Temporary wage increase of fifty cents per day to be applied as of July 1, 1918; (3) Determination of the fixed wage to be left in the hands of a federal conciliator, both sides to be bound by his decision, and pay-rolls to be readjusted thereunder commencing with July 1, 1918.

12. Strike at Kimberly Mines—Employees of the Consolidated Copper Mines Company at Kimberly.

On September 17th approximately 50 miners employed by the Consolidated Copper Mines Company at Kimberly failed to report for service and endeavored to instigate a strike among all the employees of the company. In the beginning no demands were presented but when pressed for reasons the men drew up some hastily written demands among which were requests for better sanitary conditions, better lights in and about sleeping quarters, more liberal food allowance, and other apparently legitimate grievances; but the list contained an unreasonable declaration that there would be no return to work until the "war prisoners" convicted of violating the Espionage Act were liberated. Investigation of the strike which was made by the Labor Commissioner who arrived at Kimberly September 20th disclosed the fact that the real cause of the strike was apparently due to a concerted country-wide endeavor of the I. W. W. members to make a demonstration protest against the sentences of Haywood, et al., convicted at Chicago recently on disloyalty charges. At a meeting of the strikers it was agreed that the conditions relative to the "war prisoners" would be eliminated, and all of the striking miners who had not left the camp returned to work.

PART VI
ENFORCEMENT OF LABOR LAWS
IN NEVADA

1917-18

ENFORCEMENT OF LABOR LAWS IN NEVADA

POWERS AND LIMITATIONS OF LABOR COMMISSIONER

As pointed out in the introductory section of this report, it is the duty of the Labor Commissioner to enforce all labor laws of the State. It has been well said that labor legislation, for the most part, is defective on account of defective administration, and upon this point it will be found that the greatest hindrance to effective enforcement of laws enacted for the protection of wage-earners is the lack of adequate appropriations. That this condition in the State of Nevada is an unfortunate but nevertheless a real one, since the sum total of all appropriations available, less the salaries of the Commissioner and his clerks, is only \$700 per year, an amount scarcely sufficient for the postage and paper required to gather statistics. Under the present limitations of the Commission it is impossible to employ inspectors, consequently the only notice had of violations is that which is voluntarily given by persons who are injured or aggrieved. Ordinarily this might be sufficient were it not for the fact that a large number of workers, unaided and unadvised, are unable to avail themselves of the benefits of legislation.

As a result of this handicap it has been the purpose and aim of the Commission to investigate as expeditiously and thoroughly as possible all cases brought to its attention, but the opportunity for personal observation of conditions prevailing and personal interviews with the workers involved is practically prohibited, and it must be readily admitted that those who will stoop to break the law are usually shifty and do not make a written communication, or bold enough to ignore it.

Method of Adjusting Wage Claims

Under the statutes it is provided that the Labor Commissioner is to enforce the laws with respect to the collection of wages, yet this group of claims constitutes by far the largest number of claims filed with the commission. In the opinion of most persons it is the legal duty of the Labor Commissioner to promptly secure what they have labored for; indeed, such should be the duty. While the law may be and is insufficient in this respect a remedy has been adopted of rendering all the assistance possible to those workers who are unable to collect the wages due them. When a wage claim is filed with the commission the complainant is advised that the Labor Commissioner has no power to collect the wages. He is advised, however, with respect to his rights under the law and urged to avail himself without delay of its provisions in cases where there is sufficient property to protect the wages due. If the assistance of the Commissioner is desired, he is addressed to the employer urging him to make a settlement with the worker, due his workmen, citing for his information and guidance the provisions of Chapter 276, Statutes of 1913, which makes it a misdemeanor for an employer to have made false representations regarding his ability to pay the wages of labor employed. In a great many cases the action of the

laborer in preparing to file a mechanics' lien, together with the persuasion of the Labor Commissioner, results in the prompt payment of wages.

Prosecutions for False Representation

If it appears possible to secure a conviction of the employer for non-payment of wages, the facts are reported to the district attorney of the county and a prosecution asked for under the provisions of section 276, above mentioned. This attempt at utilizing the courts, however, has proved unsuccessful because it must be shown that there was false representation as to having sufficient funds to pay the wages. As a general rule, this particular point is not discussed when one seeks employment; the workman makes inquiries regarding the wages per day, the hours of service, and general working conditions, but he is not prone to quiz an employer with respect to his financial standing. As a matter of fact, the failure to pay usually comes after the employer has successfully met one or more of his monthly pay-rolls, then after the funds have become exhausted he studiously avoids any reference to his inability to pay. In occasional cases too men work with a knowledge that their pay depends upon the sale of stocks or upon a realization of the unseen values of the property.

District Attorneys are not likely to institute proceedings unless there is a reasonable chance for conviction, and frequently the worker has traveled so far from the seat of trouble that he cannot afford the time or expense necessary to assist in the prosecution. It must be understood too that criminal prosecution under the section referred to, if successful, would not result in the collection of the money due the wage-earner. For these reasons prosecutions are hard to institute and no cases have been carried further than a presentation to the district attorneys.

Nature of Complaints Received

During the two-year period of 1917 and 1918 there were 110 complaints of various kinds filed with the Labor Commissioner. As stated elsewhere, the largest number of them had reference to the nonpayment of wages, there being 79 instances of this character. In 47 of these cases the complainant merely asked for information relative to his rights, or inquired whether the Labor Commissioner had power to enforce the collection of wages. In 32 of the wage-claim cases the Labor Commissioner made attempt to negotiate a friendly settlement, resulting in the adjustment of 23 cases satisfactorily and the collection of \$1,091.71 for the persons involved. Fourteen complaints were filed against employers for violations of the hours of service laws, in which cases the name of the employee making the complaint was withheld and after proper investigation the violation was taken up in the name of the Labor Commissioner as complainant. This class of cases were settled with but little controversy. Seven complaints were filed against employment agencies for alleged misrepresentations of facts with respect to employment, five of which were adjusted, one withdrawn and one still pending. The cases referred to miscellaneous misfortunes, such as illtreatment, unsanitary conditions, accidents and hospitals.

Wherever the Labor Commissioner failed to effect a settlement in the wage collection cases, the worker was thrown upon his own resources and in many instances lost all money due.

The violation of the hours of service laws, the complaints against

agencies, and the wage claims in which special effort was commissioner to effect a conciliatory settlement, consisting ately one-half of all complaints, are mentioned briefly, as

Violations of Eight-Hour Law

Filed March 20, 1917. Labor Commissioner v. Matthew and Barnes. Adjusted.

Filed March 22, 1917. Labor Commissioner v. L. C. Merz, Roches-

Filed March 31, 1917. Labor Commissioner v. American Hotel. Adjusted.

Filed March 31, 1917. Labor Commissioner v. Nevada Consolidated Company, McGill. Adjusted.

Filed May 24, 1917. Labor Commissioner v. Los Angeles and Salt Company, Las Vegas. Adjusted.

Filed June 7, 1917. Labor Commissioner v. Thompson Smelter. Adjusted.

Filed August 5, 1917. Labor Commissioner v. W. J. Bradley, Winnemucca. Adjusted.

Filed November 11, 1917. Labor Commissioner v. Olympic Mines Co. Adjusted.

Filed March 13, 1918. Labor Commissioner v. New Austin Mines Co. Adjusted.

Filed August 9, 1918. Labor Commissioner v. Consolidated Copper Co. Kimberly. Adjusted.

Filed October 5, 1918. Labor Commissioner v. County Commissioners, Reno. Adjusted.

Filed October 28, 1918. Labor Commissioner v. Los Angeles and Broadway Company, Las Vegas. Adjusted.

Filed November 4, 1918. Labor Commissioner v. Carrara Marble Co. Pending.

Filed November 14, 1918. Labor Commissioner v. Sheriff of County, Reno. Pending.

Complaints Against Employment Agencies

Filed March 7, 1918. J. Caporal v. Harry Gentry, St. Thomas.

Filed May 2, 1918. George Wade v. Frankovich Employment Agency. Adjusted.

Filed April 25, 1918. Fred Egli v. Leter Employment Agency. Adjusted.

Filed May 6, 1918. Nich Vouch v. Reno Employment and Real Estate Co. Reno. Adjusted.

Filed June 24, 1918. Cornelius Collins v. Frankovich Employment Agency. Adjusted.

Filed September 6, 1918. L. M. Nichols v. Frankovich Employment Agency. Withdrawn.

Filed November 11, 1918. R. F. Bibb v. Brooks Employment Agency. Pending.

Nonpayment of Wages

Filed January 23, 1917. J. E. Mallory v. P. Conway, Sweetwater. Collection of \$2.50.

Filed February 18, 1917. W. E. Wilkins v. Mazuma Hills Mining Co. Troughs. Dropped.

Filed August 23, 1917. C. J. Oliver v. Southern Pacific Company. Adjusted with collection of \$63.67.

Filed August 31, 1917. Anna Bradley v. Thomas Short, Lurline.

Case 104—Filed August 31, 1917. Crescent Mercantile Company v. Henry B. Meade, Crescent. Dropped.

Case 117—Filed September 8, 1917. A. Roblt v. Antimony and Silver Mining Company, Battle Mountain. Adjusted.

Case 106—Filed September 19, 1917. Thos. H. Hooper v. Onondago Mines Company, Palsade. Adjusted and collected \$221.24.

Case 109—Filed October 10, 1917. Sam J. Baker v. D. L. Blenfield Construction Company, Wellington. Adjusted.

Case 110—Filed October 19, 1917. C. P. Anderson v. Southern Pacific Company, Lovelock. Dropped.

Case 80—Filed December 12, 1917. Dr. T. H. Harper v. West Mining Company, Barth. Adjusted and collected \$125.

Case 114—Filed December 15, 1917. Fred Rund v. Southern Pacific Company, Inlay. Adjusted and collected three days' wages.

Case 78—Filed December 24, 1917. J. W. Petrie v. Mutual Benefit Association of V. & T. Railroad Employees. Adjusted and collected \$45.

Case 124—Filed January 26, 1918. Jacob Luck v. National Antimony Mines Company, Mill City. Adjusted and collected \$106.40.

Case 122—Filed February 5, 1918. Frank Boggio v. Aurora Consolidated Mines Company, Aurora. Adjusted and collected \$4.

Case 126—Filed February 16, 1918. F. E. Dunleavy v. Richmond Mining Company, Golconda. Dropped.

Case 127—Filed February 17, 1918. Thomas James v. Pilot Copper Company, Luning. Adjusted.

Case 128—Filed February 21, 1918. Joe Rackerby v. George Feurnan, Sulphur. Adjusted and collected \$23.

Case 131—Filed March 22, 1918. James E. Farley v. Joe Lockard, Rhyolite. Referred to District Attorney of Nye County.

Case 136—Filed March 29, 1918—Clarence Jones v. Lincoln Hill Mine and Milling Company, Rochester. Adjusted and collected \$185.

Case 140—Filed May 23, 1918. George I. Williams v. Western Mining Company, Battle Mountain. Dropped.

Case 141—Filed May 23, 1918. Mike Doyle v. D. L. Blenfield Construction Company, Wellington. Adjusted and collected \$94.80.

Case 145—Filed June 15, 1918. Henry Brown v. Minden Butter Company, Minden. Adjusted.

Case 151—Filed June 19, 1918. E. C. Fries v. National Antimony Company, Mill City. Adjusted and collected \$6.

Case 156—Filed July 10, 1918. C. E. Young v. Spring Valley Copper Mines Company, Schellbourne. Referred to District Attorney of White Pine County.

Case 157—Filed July 12, 1918. Alex Lewis v. Pacific Live Stock Company, Jungo. Adjusted and collected \$36.

Case 159—Filed July 14, 1918. L. F. Raiche v. Western Pacific Railroad Company, Reno. Adjusted and collected \$3.35.

Case 163—Filed July 15, 1918. James Ottavio v. Oklahoma Mining Company, Winnemucca. Adjusted.

Case 166—Filed August 9, 1918. H. R. Charles v. Fitzgerald Construction Company, Wellington. Adjusted and collected \$25.80.

Case 171—Filed September 4, 1918. David Reeves v. Frank Wilson, Fallon. Withdrawn.

Case 174—Filed September 17, 1918. Victor Casazza v. D. L. Blenfield Construction Company, Wellington. Adjusted and collected \$75.45.

Case 175—Filed September 17, 1918. A. Garadella v. D. L. Blenfield Construction Company, Wellington. Adjusted and collected \$77.

Case 188—Filed October 10, 1918. W. E. King v. Western Pacific Railroad Company, Elko. Adjusted.

PART VII
SCCELLANEOUS INVESTIGATIONS
AND REPORTS
1917-18



T VII. MISCELLANEOUS INVESTIGATIONS AND REPORTS

I. COST OF LIVING

ous reasons no expenses were incurred by the Labor Com-
paring the past two years in the collection of data on the cost
the State of Nevada. That this work is an essential part of
s of this department is evidenced by the fact that it is stipu-
law as being one of the duties of the commissioner and from
fact that the Labor Commissions of other States gather
formation on like subjects. It is a matter of great impor-
re accurate information relative to the changes in the cost
saries of life, not only for those who are interested in the
an academic standpoint, but for the practical use of those
rged with the responsible work of actually fixing wages and
urrounding the workers.

ely, there is available for general information on this sub-
istics collected by the United States Department of Labor,
es, of course, to the entire nation, but which is bound to
fair measure the conditions prevailing in any given locality.
al statistics are gathered, however, principally from the
whose workers are engaged extensively in manufacturing
ing the very articles which enter into the cost of living
nently. In the State of Nevada a major portion of the work-
aged in those industries which require them to live in
ns and villages far from the places of production and
of the many articles which enter into the budget of living
For this reason there is special need for the collection of
this State if we are to know accurately the facts and con-
ying to our own people.

ed States Bureau of Labor Statistics has published annual
to retail prices in the principal cities of the country since
07. From this information has been worked out relative
ated by index numbers, as well as actual costs of the prin-
s of foodstuffs for the country as a whole. This data fur-
interesting facts and shows very conclusively the steady
ce movement to which the war has given an added impetus.
lected as being fairly representative of actual conditions is
ith in the following tables:

In this table is shown an allocation of the expenditures
ncipal items in the annual budget of wage-earners' families
om various studies made by commissions in the United
get the proper indication of changes in the cost of living as
e changes must be considered in respect to all things which
up the family budget. Some items will be found to repre-
ter expense than others, therefore, in determining the
rease in the budget as a whole the various items must be
A simple average of the increases for the individual items
give a true indication of the living costs. Such a table is
necessary in making calculations on the subject.

The average money retail price of 18 articles of food as
ugust 15th for the past six years is given in this table. All

of these articles show increases ranging from 52 per cent upward. When taken as a whole the combined foods show an increase of price of 70 per cent. Four articles increased over 100 per cent, as follows. Cornmeal, 127 per cent; lard and flour, 106 per cent each; and potatoes 105 per cent.

TABLE 3. The increase in price is probably best demonstrated by the use of index figures and this table is given to denote the relative retail prices of food on August 15, for the past six years.

TABLE 4. This table is given to show the conclusions of the National Industrial Conference Board and cover the five principal items in the cost of living, of the typical wage-earner, and cover a four-year period from July, 1914, to July, 1918. In the compilation of this table each item has been weighted according to the proportion of income spent for it by the wage-earner, and shows an increase in the cost of living for the four-year period of 52.3 per cent.

The tables above referred to are as follows:

TABLE 1. ALLOCATION OF EXPENDITURES IN FAMILY BUDGET

Authority	Food	Shelter	Clothing	Fuel and light	Sundries	All items
U. S. Department of Labor, 1901-11,156 families in U. S.	\$48.13	\$18.12	\$12.95	\$5.69	\$20.11	\$100
1917-608 families in New York City	45.01	12.91	14.84	4.61	22.63	100
1917-512 families in Philadelphia	43.31	12.04	15.97	4.95	23.74	100
U. S. Railroad Wage Commission, 1915-265 families in U. S.	38.00	20.00	15.00	6.00	21.00	100
Wage Commission in Dallas, Texas, 1917-50 families	45.01	14.51	12.57	9.11	18.80	100
R. C. Chapin, 1907-81 families	44.70	18.10	15.50	4.50	17.20	100
Average	\$43.13	\$17.65	\$13.21	\$5.63	\$20.38	\$100

TABLE 2. AVERAGE MONEY RETAIL PRICES 1913 TO 1918

Article	Unit	1913	1914	1915	1916	1917	1918
Sirloin steak	Pound	\$0.265	\$0.278	\$0.265	\$0.284	\$0.329	\$0.415
Round steak	Pound	.233	.232	.238	.257	.308	.396
Rib roast	Pound	.201	.214	.204	.218	.255	.326
Chuck roast	Pound		.181	.167	.177	.217	.283
Plate beef	Pound		.131	.123	.129	.172	.217
Pork chops	Pound	.218	.250	.216	.243	.344	.422
Bacon	Pound	.281	.287	.270	.293	.430	.540
Ham	Pound	.285	.291	.262	.326	.396	.485
Lard	Pound	.161	.156	.140	.210	.277	.331
Lamb	Pound	.189	.206	.205	.231	.297	.369
Hens	Pound	.215	.222	.205	.238	.279	.386
Salmon, canned	Pound			.198	.202	.271	.302
Eggs	Dozen	.330	.334	.304	.364	.460	.536
Butter	Pound	.355	.362	.335	.366	.476	.539
Cheese	Pound			.227	.245	.328	.346
Milk	Quart	.088	.089	.088	.090	.114	.136
Bread	Pound	.056	.063	.071	.072	.102	.099
Flour	Pound	.083	.085	.040	.044	.075	.068
Cornmeal	Pound	.080	.082	.083	.083	.086	.068
Rice	Pound			.091	.091	.106	.134
Potatoes	Pound	.019	.019	.014	.025	.086	.089
Onions	Pound			.081	.060	.046	.065
Beans, navy	Pound			.076	.121	.192	.171
Prunes	Pound			.135	.134	.162	.171
Raisins, seeded	Pound			.125	.123	.148	.153
Sugar	Pound	.055	.073	.067	.065	.099	.093
Coffee	Pound			.299	.299	.305	.301
Tea	Pound			.546	.546	.602	.658

3. RELATIVE RETAIL PRICES OF FOOD 1913 TO 1918

Article	Unit	1913	1914	1915	1916	1917	1918
.....	Pound ..	104	110	104	112	180	163
.....	Pound ..	104	113	107	115	138	178
.....	Pound ..	102	108	104	111	129	165
.....	Pound ..	104	119	103	116	164	201
.....	Pound ..	105	107	100	108	160	200
.....	Pound ..	106	108	98	121	147	180
.....	Pound ..	102	99	89	133	176	209
.....	Pound ..	101	104	97	112	181	181
.....	Dozen ..	96	96	88	105	134	156
.....	Pound ..	92	94	88	95	124	141
.....	Quart ..	99	100	99	101	128	153
.....	Pound ..	100	112	126	128	182	174
.....	Pound ..	100	106	124	134	229	206
.....	Pound ..	100	105	108	110	219	227
.....	Pound ..	109	111	82	141	206	229
.....	Pound ..	102	143	123	155	181	169
.....	.....	101	107	100	113	149	171

4. INCREASE IN COST OF LIVING 1914 TO 1918

Budget item	Distribution of family expenditures	Increase in cost during war period to July, 1918	Increase as related to total budget
.....	43.1 per cent	62 per cent	26.7 per cent
.....	17.7 per cent	15 per cent	2.7 per cent
.....	13.2 per cent	77 per cent	10.2 per cent
.....	5.6 per cent	45 per cent	2.5 per cent
.....	20.4 per cent	50 per cent	10.2 per cent
.....	100.0 per cent	.....	52.3 per cent

2. Employment Agencies

At present time there are about ten private employment agencies in the State, the most of which are located in the city of Reno. Of these seven are private agencies, one of which is exclusively for the State. Three are operated by the federal government which has a branch office in Reno with one branch office in Elko and another in Gardnerville. Printed schedules were sent to all of these agencies with information concerning the number of applications received, the number of applicants supplied with work, and total fees collected. The reports received were somewhat unsatisfactory. Sufficient information has not been gathered, however, to learn something of their activities. In the year only seven complaints were received from persons claiming to be victims of misrepresentations by these agencies. In five of these cases satisfactory settlements were made and fees returned, and in the sixth case the expenses of the person when obliged to travel to and from the place of employment. One case was withdrawn and one is pending. In the examination of the forms used by these private agencies and the manner in which they are filled out and filed leaves much room for improvement, and makes it almost impossible to enforce justice in the few cases adjusted it is reasonable to presume that had the persons desired to fight their cases through the courts the wage-earners would have been greatly handicapped in the absence of any legal evidence as to the representations made regarding employment.

Only one law on the statute books applying directly and

exclusively to the employment agencies. It is section 6785 of the Revised Laws, and declares it to be a misdemeanor for any agency to misrepresent the conditions of employment. This law makes no provision whatever for a practical safe-guarding of the interests of the wage-earner who is oftentimes ignorant of the meager protection which he has. Under the part of this report dealing with recommendations for labor laws, the weakness of the present system is fully divulged and suggestions made for correction of the evil.

The following table shows that 5,794 males and 541 females were furnished with work during the year 1917. Of this number the free offices operated by the federal government furnished more than one-half of the positions which were filled. The private offices, as a general rule, charge the worker direct a fee of \$1 to \$3 for each position secured. In this connection it will be noted that the apparent average fee is approximately 75 cents, but this is due to the fact that the work of the free agencies is contained in the tabulation. The summer months show much the larger number of applicants seeking work, there being nearly two thousand during the month of July alone. The total fees collected were nearly \$5,000, and it is certain that some of the offices also receive more from the employer than from the workers.

The nature of the work is principally unskilled labor for lumber camps, ranches, railroad grading and hotel and restaurant employees. The Japanese agency deals exclusively with domestic workers. In a few cases positions such as clerks, bookkeepers, stenographers, etc., were secured, but these occupations formed only a negligible part of the positions filled. The positions which were hardest to fill were those of ranch cooks and the largest number of workers applied for common labor.

PERSONS FURNISHED WITH EMPLOYMENT SHOWING TOTAL FEES CHARGED

Year 1917	Males			Females		
	Applications received for employment	Applicants supplied with work	Total fees collected during month	Applications received for employment	Applicants supplied with work	Total fees collected during month
January	118	72	\$54.00	16	12	\$9.00
February	142	68	51.00	14	10	7.50
March	634	510	381.00	92	80	45.00
April	456	428	321.00	101	66	48.75
May	838	810	610.00	58	42	30.00
June	1086	812	611.50	62	46	36.00
July	1762	1280	945.00	112	101	75.45
August	1280	908	678.00	76	60	48.00
September	652	312	234.00	84	80	60.00
October	776	364	273.00	46	22	16.75
November	208	196	150.00	40	28	21.00
December	70	56	42.00	18	14	13.50
Totals	7972	5794	\$4,350.50	719	541	\$409.25

3. Chinese and Japanese Labor

While no special investigation was conducted with respect to the number of Chinese and Japanese workers within the State, the regular

received from the employers of labor disclose some points of concerning the nature of their employment. There was 2 Japanese wage-earners and 275 Chinese, or a total of 747. indicate that approximately 3 per cent of the wage-earners are Mongolians.

that the mines and the railroads lead all other industries in of Mongolian employees would indicate that they are coming into competition with the white workers in our industries. The railroads employed 298 Japanese and 107 workers. The major portion of these men were employed as miners, but a small number were used in and about the railroads as laborers, helpers, and repairmen. The mines employed 298 Japanese and 33 Chinese workers. A large number of these Japanese came into direct competition with the laborers about the mines. They were employed at work and positions which might be easily filled by white men. The Chinese were generally employed as cooks, messengers, and in more isolated mining camps which positions are difficult to fill by any other nationality.

Statutes prohibit the employment of a "Chinaman or Mongolian" in any capacity on any public works, or in or about any building, institution, or grounds under the control of the State. They are further prohibited in an indirect way, by the statutes from being employed in connection with any public works. The laws referred to read verbatim as follows:

3483. From and after the passage of this act, no Chinaman or Mongolian shall be employed, directly or indirectly, on any public works, or in or about any buildings or institutions, or grounds, under the control of this State.

3484. Hereafter no right-of-way or charter, or other franchise for the construction of any public works by any railroad or other corporation or association shall be granted to any corporation or association, except upon the express condition that no Mongolian or Chinese shall be employed on or in connection with the construction of such work in any capacity.

3485. Any violation of the conditions of this act shall constitute a forfeiture of all rights, privileges, and franchise granted to such corporation or association.

4. Prison Labor

A special investigation was made by the Labor Commissioner with reference to the employment of prison labor to ascertain the nature of the work performed, the compensation paid, and the extent to which it comes into competition with labor outside of penal institutions. Replies were received from all county sheriffs and the warden of the State penitentiary, who submitted data on the schedules which were prepared and mailed to them. In seven counties no work was done by those who were confined to the county jails. In all the other counties work was demanded of a small percentage of inmates. In the State penitentiary approximately one-half of the prisoners were engaged in some kind of employment.

One of the work required of persons confined in county jails is on the public road work, but a variety of employments are shown in the mailed reports, such as digging ditches, cutting wood, cleaning

streets, caring for courthouse lawn, and cleaning around jail. Those confined in the state prison were engaged at farm work, quarry work, and prison office work. All of the work performed was public work and none of the inmates were used in competition with free labor. The county prisoners were paid no wages, but the State paid 10 cents per day for all labor performed.

A digest of the laws governing prison labor in Nevada shows that this State is free from any probability of direct and objectionable competition between prison labor and outside industrial workers. The Governor, Secretary of State, and Attorney-General constitute a board of commissioners with full charge of prison labor in the state penitentiary; the sheriffs in the various counties have charge of the jails and the employment of county convicts. Persons confined in the state prison may be employed at work on the public roads, the state farm, or at any approved public work within the prison enclosure. Under an act of the legislature passed in 1915 the State was authorized to employ one stonecutter to supervise the cutting of stone by the convicts, said stone to be used in the erection of a modern penitentiary at some future time.

The data collected with respect to the number of inmates in the various prisons, the number required to work, the total days worked, and the total wages paid, is herewith presented in two tables, as follows.

TABLE 1. PRISON LABOR PERFORMED BY INMATES OF STATE PENITENTIARY

Year 1917	Total number inmates	Number required to work	Total days worked	Total wages paid
January	176	30	914	\$91.40
February	179	31	823	82.30
March	183	72	1210	121.00
April	187	103	2343	234.30
May	193	113	2451	245.10
June	189	109	2080	208.00
July	190	111	2457	245.70
August	187	117	1669	166.90
September	187	26	738	73.80
October	199	84	1505	150.50
November	186	62	884	88.40
December	160	29	813	81.30
Averages and totals	184	74	17897	\$1,788.70

TABLE 2. PRISON LABOR PERFORMED BY INMATES OF COUNTY JAILS

Year 1917	Total number inmates	Number required to work	Total days worked	Total wages paid
January	159	8	102	-----
February	166	8	130	-----
March	172	10	198	-----
April	175	39	147	-----
May	186	56	98	-----
June	182	6	84	-----
July	187	11	104	-----
August	193	16	66	-----
September	200	29	122	-----
October	209	29	45	-----
November	206	44	113	-----
December	210	30	130	-----
Averages and totals	186	24	1334	-----

the questions which always arises in connection with the of convicts is the attitude of organized labor which, unfortunately as well known as it should be. Because of their opposition is known as "contract convict labor system" trade unions accused of being opposed to the employment of prisoners charged with being selfish and narrow by their opponents who are not well informed as to organized labor's attitude. In an article appearing a short time ago in the *Annals of the American Academy of Political and Social Science*, Mr. John M. G. [?], editor of the *International Moulders' Journal*, and well known as a speaker for labor, covered this much mooted question so that it should be read by every student of the prison labor problem. He said in part:

labor has a definite policy on the question of convict labor which it has recently endeavored to apply; and with which it seeks to secure sympathy from the public. The trade-unions have never advocated that convicts be employed in idleness; instead they have insisted that convicts should be employed because the convict's reformation would be impossible without useful labor.

Organized labor, however, has differed radically with some business and industry as to the manner in which convicts should be employed and the conditions which should surround them while at work. They have always opposed the contract convict labor system, insisting that the convict should not be employed for the private profit of a contractor who is primarily in making money through the forced labor of the unfree man whom he has control and whose interest in their reformation is negligible factor.

Instead of the work of the convicts as producers which meets with trade-union approval, nor is it that by working they may keep some free men idle. The methods by which prison labor, when performed for the benefit of contractors, places the product of the convicts' labor on the market forces reduction in wages upon large numbers of free workmen, thus lowering their standard of living.

Under the trade-union attitude upon this subject let us presume that the State would decide to build an addition to one of its prisons or erect a public building by convict labor. This would replace the labor of a proportion of building trades workmen who otherwise would have been employed. Instead of erecting a public building with convict labor, the State would give public contractors the privilege of contracting for convict labor and the convicts would be placed to work erecting buildings for private individuals in competition with contractors employing free labor, then an entirely new form of competition would be created, for not only would the number of convicts employed be increased, but the number of free workmen, but the prison contractors, because of their much lower labor costs, would force the free contractors to reduce wages or drive them from the field. It is this form of convict labor competition that the trade-unions object.

In the above light, the laws of our State do not permit nor do the practices disclose any competition between convict and free labor. The fact is of widespread importance to free labor, free institutions, and in fact to freedom itself.

5. Hospitals

The question of hospital treatment for persons injured in the course of their employment is a matter of much concern to the wage-earners, especially those who are unfortunate enough to have to bear this burden at a time when they are least able to do so. Likewise, to those whose duty it is to erect the safeguards which are necessary to insure the health and industry of the injured person, the question is of great importance. The organic act creating the Labor Com-

mission evidently anticipates a thorough and detailed report with respect to all classes of hospitals in the State in their relation to the wage-earners, particularly those hospitals which are maintained through cooperative arrangements between the employers and employees.

It seems needless to say that no expense could possibly be incurred by this department in making an investigation under the present limitations. A foundation has been set, however, which will enable an easy approach to such an investigation in the future. Correspondence was resorted to in order to secure the information at hand and a list of questions submitted to the leading employers by which method replies were received from 825 employers. In this connection the following queries were submitted:

1. What is the name and location of hospital, if any, in which your employees are treated when sick or injured?
2. Give name and address of chief surgeon?
3. By whom are the fees paid? (State fully the exact amount of contributions by employer and by each employee.)
4. What is (a) the capacity of the hospital; (b) the nature of the equipment; and (c) the character of service rendered therein?
5. If you contribute to no particular hospital, then state fully just what method is used to care for sick or injured employees.

A summary of the answers received show that only 301 employers have any well defined policy in the handling of injuries and sickness of their employees. Of this number 226 have arrangements of some character with a given hospital; 42 carry accident benefit insurance with the Nevada Industrial Insurance Commission; and 33 gave evasive and incomplete replies which made them impossible to classify. The remaining 524 employers made no showing whatever answering all questions, as a rule, with the single word "none."

The amount of fees collected varied from fifty cents upward. One hundred and sixty-nine employers gave definite figures as follows: Five companies collected 50 cents; 130 collect \$1; 26 collect \$1.50; and 8 collect \$2. The usual method of collection is by making deductions from the wages of the worker each month. It is interesting to note that in 52 instances an equal amount is contributed by the employer; and these cases probably include all of the 42 employers who have accident benefit insurance with the Industrial Commission. Nineteen employers claimed that the entire cost of hospital treatment was charged to the business they operated and no collections made from employees.

Information with respect to the disposition of the fees collected was not clearly indicated in all cases. Where hospitals were maintained by the employers exclusively the whole amount collected appears to have been deposited in a hospital fund used only for care of the sick and injured; in some cases the employer contributed all fees collected directly to a private hospital who agreed to furnish all treatment required; in a great number of cases the fees, or a certain portion of them, was paid to the local or nearest physician for the treatment of nonhospital cases, with the understanding that the employer was to

bear all expenses of hospital treatment in event such service was necessary.

The large transcontinental railroad companies, of which three traverse the State, maintain general hospitals in adjoining States and small emergency or receiving hospitals at their principal division terminals. The large mining companies at Ely, Tonopah and Goldfield, apparently own or lease their own hospitals. In several places hospitals are maintained by associations or individuals and accept patients under the care of a physician only, and others provide all professional service. In nearly every county the public or county hospital is utilized for the purpose of providing care and attention to injured employees, the expense being borne by the employer and employees from the fees collected.

From the information collected, which probably discloses every hospital in the State of any note, a list has been prepared which shows the name of the hospital and its location, the name of the chief surgeon, the capacity and equipment of the hospital, and the number of employers reported as patronizing same. A careful examination of the reports show that they do not all agree with respect to the particulars regarding capacity and equipment, and this part of the information might be altered upon a personal inspection. It is also probable that some of the concerns here listed should not properly be termed "hospitals" since their size and equipment do not seem to justify such classification, but in the absence of any standard the following are included:

List of Nevada Hospitals Patronized by Employers of Labor

Name of hospital	Location	Chief surgeon	Beds	Patrons
Associated Operators	Goldfield	Dr. R. R. Craig	50	18
Aurora Consolidated	Aurora	Dr. W. H. Riley	4	3
Carson City	Carson City	(Not given)	8	1
Carson Valley	Minden	Dr. C. E. Thompson	10	4
Duckworth	Pioche	Dr. T. O. Duckworth	12	2
Elkoro Mines	Jarbridge	Dr. A. M. Dwight	4	1
Elko County	Elko	(Not given)	19	3
Churchill County	Fallon	Dr. C. H. Lenhens	1	1
Ely General	Ely	Dr. W. S. Holmquist	10	3
Eureka County	Eureka	Dr. G. M. Roberts	1	1
Humboldt County	Winnemucca	Dr. G. F. Pope	2	2
Kimberly	Kimberly	Dr. P. Whelan	16	1
Lander County	Austin	Dr. G. L. Belanger	1	1
Lander County (branch)	Battle Mt.	Dr. S. R. Clark	4	8
Las Vegas	Las Vegas	Dr. R. W. Martin	20	37
Los Angeles and Salt Lake	Las Vegas	Dr. H. L. Hewetson	6	3
Lovelock Association	Lovelock	Dr. E. K. Smith	15	9
Manhattan Association	Manhattan	Dr. F. J. Hackney	6	15
Mason	Mason	Dr. W. M. Edwards	20	12
Mineral County	Hawthorne	Dr. F. C. Pasche	20	12
Mt. Rose	Reno	(Not given)	60	6
Nevada Wonder Mines	Wonder	Dr. J. C. Ferrell	4	2
Nye County	Tonopah	Dr. J. R. Masterson	10	2
Round Mountain	Round Mt.	Dr. F. J. Crane	2	5
Row's	Rochester	Dr. W. D. Row	5	3
Stockham's	Pioche	Dr. W. W. Stockham	5	7
Searchlight	Searchlight	Dr. J. H. Hastings	4	8
Storey County	Virginia	Dr. F. W. Hodgins	40	16
St. Mary's	Reno	(Not given)	60	5
Steppe	East Ely	Dr. R. A. Bowdle	45	6
Southern Pacific	Sparks	Dr. J. A. Ascher	4	1
Tonopah Mines	Tonopah	Dr. E. S. Grigaby	20	29

There are two state laws bearing on the subject of hospital treatment for persons injured in the course of employment. Section 1943, Revised Laws, has been on the statutes for fifteen years and cannot be

said to be a model of its kind; it is ambiguous in its terms and hard for the average layman to understand, but evidently intends that it shall be a misdemeanor for any person, firm or corporation to collect hospital fees from employees without furnishing hospital treatment. The Nevada Industrial Insurance Act, Chapter 111, Statutes of 1913, as amended by Chapter 190, Statutes of 1915, and Chapter 233, Statutes of 1917, is of very recent origin and prescribes very plainly the rights and privileges of employees whose employers have chosen to take out the benefits. Section 23 (a) of this act reads as follows:

Every injured employee within the provisions of this act shall be entitled to receive, and shall receive promptly, such medical, surgical and hospital or other treatment, nursing, medicines, medical and surgical supplies, crutches and apparatus, including artificial members, as may reasonably be required at the time of the injury and within ninety days thereafter, which may be extended to one year by the Nevada Industrial Commission. The benefits conferred by this paragraph upon the injured employee shall hereinafter be termed "Accident Benefits."

Under this section, the employer who pays the premiums is relieved from furnishing accident benefits and all such relief is provided by the Nevada Industrial Commission. The employer is permitted to collect one-half of the premiums from his employees by making deductions in the pay-rolls, but such deductions are not to exceed one dollar per month. The law requires the employer to render "first aid," for which service he is entitled to receive from the commission the amount of such expenditures reasonably made. This feature of the law is separate and distinct from that which provides compensation for time lost on account of injuries received.

It is further provided that employers who furnish the equivalent of the care and treatment allowed by the commission may make other arrangements and not carry the accident benefits. A great many of the larger companies have taken advantage of this opportunity, which is believed by many workers to be an undesirable proviso because there is no public accounting of the fees paid to a private employer. Failure to receive the required treatment, however, permits the injured employee to seek redress through the commission which has authority to take jurisdiction of the treatment at the expense of the employer.

PART VIII

**RECOMMENDATIONS FOR LABOR
LEGISLATION**

1917-18

PART VIII. RECOMMENDATIONS FOR LABOR LEGISLATION

INTRODUCTION

Records of the past alone should not constitute the scope of investigations, work and analysis made by a labor department. An equal or more important duty should be the assembling of facts and the marshaling of evidence concerning the conditions which now confront us, and concerning the lines of progress which we propose to follow in the future. With that conception of official duty and with the sincere hope that the thoughts here presented will play a small part in the big work of social betterment and advancement, the recommendations which follow are respectfully submitted to the Governor and the members of the twenty-ninth legislature.

While there are several questions which appear of urgent necessity for the proper and efficient administration of the labor commission law and the rightful protection of the wage-earners, it has not been deemed advisable or appropriate to initiate the legislation in this report. There are five questions, however, which have come so prominently to the attention of this commission that it seems an imperative duty to make special mention of them and urge appropriate action thereon. They are: (1) Regulation of private employment agencies; (2) Prompt payment of wages; (3) Hospital treatment for sick and injured employees; (4) Compulsory workmen's compensation law; and (5) Adequate appropriation for Labor Commission. These questions are taken up and discussed in the order in which they are listed.

1. Regulation of Private Employment Agencies

The problem of employment, both when there is a scarcity of labor and when there is a dearth of work, must be solved by the proper maintenance of employment bureaus, either private or public, by which the "jobless man" and the "manless job" can be brought together. This State has that problem constantly before it because it is in a considerable measure affected by seasonal employment. This is particularly true of the large farming and stock-raising industry which require during the summer months more than double their regular force, and it is equally true of the lumber mills and camps of western Nevada and eastern California which operate almost exclusively between the winter seasons.

Evils of the Present System. The present system in vogue consists largely of unregulated private agencies which conduct a rather thriving business throughout the year. Meager records from the employment agencies in Nevada show that 6,335 applicants were supplied with work during the year 1917, and this probably falls far short of the real volume of business transacted. The State is sufficiently supplied with these small agencies to demonstrate very clearly the evils of the present system, which result largely from the unrestricted liberties which they enjoy. Chief among the abuses practiced are misrepresentation of conditions, failure to supply applicant with written statement of facts, and receipts for fees paid, refusal to refund fees and expenses to misinformed persons, and false advertising.

In Nevada no special legislation has been enacted except section 6785, which makes it a misdemeanor to misrepresent conditions of employment, for which crime the agency is punished; but like many other statutes it leaves the wage-earner to suffer all his losses and inconveniences.

Remedies Applied in Other States. This question has been dealt with in many States and the tendency seems to be toward the elimination of private offices and the substitution of free employment bureaus maintained by the State or by cooperation between the federal and state governments. Where this progressive step has not been taken, legislative bodies have set up strict regulations under which the private agencies must operate with the result that the evils above referred to have been almost entirely eliminated. In the State of Washington private agencies made themselves so generally distrusted that in 1915 they were completely abolished by a popular vote of the people. In Oregon the private agencies are put under the supervision of the Commissioner of Labor, license is required, and other conditions of conduct prescribed. In California there is a very strict regulation with a high license which has driven out the less responsible agencies, and coincident with these restrictions, provisions were made for a system of state employment bureaus under the management of the Commissioner of Labor. In Arizona an appropriation of \$2,500 was authorized for the establishment and maintenance of free employment bureaus to be conducted in cooperation with and under the established rules and regulations of the United States Department of Labor. In Utah private agencies operate under fixed rules and are required to pay a license and to furnish bond for strict compliance with all regulations.

A law eliminating the private employment agencies and the substitution of free employment bureaus maintained by cooperation between the federal and state governments is respectfully suggested.

2. Prompt Payment of Wages

There is no greater exploitation of labor than through the nonpayment of wages, and but few States in the Union offer a more fertile field than Nevada for the operation of unscrupulous employers. The wide stretches of sparsely populated areas, in which the adventurous operator often begins his search for wealth, permits the staking of everything, including the wages of his employees, upon the success of the one undertaking. When the time comes for the final settlement, a foreman and a small group of laborers are left without compensation for their work, oftentimes not even knowing the address of the "Company" who commenced the enterprise.

Quite naturally many of the complaints arising under such circumstances are referred to the Labor Commissioner who is generally believed to possess the power of collection and who is expected to adjust the claim without delay. It may be assumed that the complaints which reach the Labor Commissioner constitutes only a part of the cases which actually exist, since a large body of workers are ignorant of their rights and fearful of the law. Even with more responsible concerns the element of loss in wages to the workman is not entirely removed. It is true that the workman may avail himself of the mechanics' lien law and attach the property of the employer, but in

case coming to the attention of the commissioner the time when liens had expired before action was attempted. This is the fact that an employer with a respectable showing of machinery and equipment is able to put off payment and forestall liens for more than fifty days after operation has ceased by active promises to pay "within a few days" or by assuring resumption of work," or in some other manner equally

Be Considered in Wage Payment Laws. The question of payment involves a number of correlated subjects all of which are considered in the making of legislation to protect the wages of labor. These subjects may be grouped into four general classes: (1) the requirement that wages be paid at fixed intervals; (2) the requirement of the prompt payment of wages at the termination of employment; (3) the prohibition against payment of wages in any form but lawful money; and (4) a provision for State enforcement of the law. The groupings are so general that they may need further definition and are of sufficient importance to require a more extended treatment than a mere mention by title.

Be Paid at Fixed Intervals. Laws which stipulate a fixed payment of wages are now in force in nearly all States in the Union. Thirty-one States have statutes which provide for a semi-monthly payment of wages; eight States require that wages be paid weekly; and only ten States appear to have enacted no legislation on this subject, in which group Nevada is placed. In Nevada the time of payment is fixed by the contract of employment in very rare instances. The general rule is a custom which seems to have settled on a monthly payment. Recent press reports are to the effect that the General of Railroads had issued an order directing the transcontinental railroads operating in the western district to pay railroad employees twice per month, commencing with January 1, 1919; this affords some relief to employees of the three transcontinental lines in this State, but these employees constitute only about 20 per cent of the wage-earners in Nevada.

The requirement of having fixed intervals stipulated by law is to protect labor against the hardships resulting from payment at long intervals and the temptations which surround those who are obliged to wait for credit. It places a check on employers of questionable credit and enables the workman to pay cash for his support. From the standpoint of common justice, capital has no right to force loans upon labor; the workman turns over the fruits of his toil every day that he labors, and it is unjust to require him to wait from four to six weeks for his pay. The requirement of legislation, which is of comparatively recent origin, has been sufficiently to insure its validity in the courts.

Of Wages at Termination of Employment. The prompt payment of wages at the termination of employment, caused either by discharge, dismissal, etc., is an obvious necessity, and has been recognized in the laws of many progressive States. The workman, when his work ceases, is obliged to go elsewhere to seek

employment, and a waiting period of any duration is fraught with great inconvenience and hardships, particularly is this true when the termination of work comes unexpectedly by dismissal.

Several States have remedied this evil by the passage of laws which give the workman material relief when required to wait for money earned. In California, Indiana, and South Carolina recent laws have been enacted which require wages to be paid within a stipulated time after cessation of work, and provides for a continuance of the wage-earner's salary until paid, limited to a period of thirty days; and in addition thereto the law makes the failure to pay a misdemeanor for which the employer is subject to punishment.

We have on the statute books of Nevada a law, referred to elsewhere in this report, which is evidently intended to require payments at the termination of employment. But the law is ambiguous and uncertain in its terms, and places the burden upon the employee of proving that false representations regarding the ability of the employer to pay for the labor performed, and if the suit is successful the employer may be penalized for misdemeanor while the employee gets no benefits from the prosecution, not even the wages he has earned.

Payment of Wages in Lawful Money. It is a pleasure to be able to record, among all the defects of our wage payment legislation, one point which is covered satisfactorily. Section 1939, Revised Laws, is written in unequivocating language and provides that no person or corporation engaged in any business in this State shall issue in payment for wages due an employee, any order, check, memorandum or other acknowledgment of indebtedness, unless the same is a negotiable instrument payable without discount, in cash on demand, at some bank or other established place of business.

Provision for State Enforcement of Law. The most rigid law that can be prepared will be of little value and far from perfect if it does not provide for enforcement by the proper officials of the State. The methods to be employed in accomplishing this provision are not so easily outlined. In searching for enlightenment on this question, and examining the experience of other States, it has been found that two remedial measures are most generally suggested: First, the requirement of all employers of labor to furnish bond to insure the payment of wages, just as contractors on public works are required to do; secondly, the establishment of small debtors' courts under jurisdiction of the justices of the peace, where cases involving small debts could be disposed of rapidly, informally, and cheaply. It is essential of course that the Labor Commissioner be empowered to enforce the general provision of the law.

It is respectfully urged that this question receive the considerate attention of the legislature and that a remedial law, including a semi-monthly pay day, be enacted.

3. Hospital Treatment for Sick and Injured Employees

It is a common practice in this State, as in many others, for the employer to collect hospital fees from his employees for the purpose of providing medical attention for the sick and injured. It happens in a few cases that the employer supplements the collections made by appro-

om his business an equal sum of money. There is no par-
 ection from the average workman or employer to this method
 the cost of medical attention. The extent to which this cus-
 ticed in Nevada is given elsewhere in this report, under the
 "Hospitals" in Part VII, from which it appears that approx-
 -third of the employers questioned make arrangements for
 atment, and that the usual amount collected is \$1 per month.

the Present System. The evils of the present system lie in
 at (1) where the cost has been provided those who are
 for the expenditure of the money fail to arrange adequate
 r caring for the sick and injured; (2) that a large propor-
 wage-earners do not come within the fee system which is
 established; (3) there is no public accounting for the money
 llected for medical attention of employees. There is some
 to whether or not any attempt to patch up the outworn
 ith its attachment of evils, can result in any permanent or
 mprovement.

Compulsory Health Insurance Is the Remedy. The most enlightened
 ms to be that there is an imperative need for an awakening
 lip Van Winkle slumber, for a step forward to compulsory
 rance, which the Nations of Europe have one after another
 nd adopted. This advanced thought has taken a firm hold
 us States of the Union and its significance so readily grasped
 ubinow, who conducted the investigation for the California
 a, has well stated that "the debates on compulsory health
 no longer center around questions of desirability, but around
 of administrative detail." The Governors of five States,
 the Governor of Nevada, in messages to their respective
 s in the year 1917, urged the adoption of health insurance.
 mmissions were appointed in Massachusetts and California
 official reports contain an enthusiastic approval of the idea.

Report of California Commission. The report rendered by the com-
 our neighboring State, California, is of such special interest
 eance that an excerpt is here given which gives indisputable
 y the law should be compulsory, and why contributions
 e from the individual workers, from the employers, and
 tate. The following is quoted:

a possibility, not a certainty, in the life of any individual, and most
 whom every dollar counts, are inclined to rely on the chances of
 Though many wage-earners, recognizing the advantage of health
 rganize in various ways to protect themselves, the great majority
 aid wage-earners, most in need of protection, will not voluntarily
 en among persons of better earning capacity who are still in the
 cannot afford a long illness, there are many who do not see the
 of the insurance method.

n: Health insurance to be effective must be made compulsory upon
 al workers.

adequate protective system would guarantee the wage-earner medical
 eluding specialists' care, surgical, hospital and dental care for him-
 nly in time of illness as well as a substantial part of wages for
 ance of himself and family during his disability due to illness. The
 afforded by existing health insurance facilities, useful though it is,
 cannot be made adequate for what the wage-earners can and do pay.

Conclusion: Some contribution from other sources than the wage-earners themselves is necessary to secure adequate health insurance for wage-earners.

The greater part of the day is spent by the wage-earner at his job. The conditions under which he works and which vitally affect his susceptibility to illness, are to a great extent under the control of his employer. The contribution by employers to health insurance of their employees would give employers a financial incentive to make conditions at the job, as far as possible, conducive to good health. This prevention of disease, one of the desired ends of health insurance, would be stimulated. Furthermore, health insurance of wage-earners would react to the decided benefit of industry through increased efficiency and a steadying influence on the average duration of employment, and as indirect beneficiaries, the employing group rightfully should contribute.

Conclusion: Contributions from industry to the health insurance of wage-earners is just and desirable.

Since the community can control general conditions which affect the health of the wage-earning group, it would be well for the community to have a direct financial interest in the bettering of conditions in place of the general interest it now has in public health; second, contributions of the State would give the State the right to regulate and control, and cooperation between health insurance and other official bodies interested in public health could be then worked out to advantage; third, the contributions to a scheme calculated to prevent destitution would be an admirable substitute for the present expenditures of large sums of public funds for the relief of destitution.

Conclusion: Contribution of the State to the health insurance of wage-earners is desirable.

The laissez-faire method of ignoring the great problems of illness among wage-earning families until actual destitution demands public attention, is socially wasteful in the extreme. It means a heavy financial burden on public funds for relief, which at best is a most unsatisfactory palliative of the disease of destitution. Health insurance offers a sensible, practical method of eliminating in part the most distressing features of the present social system, economic dependency and charitable relief. Health insurance would distribute a burden which now means hardship, suffering, and lavish public expenditure, in such a way that it would be a burden no longer. Through its beneficial effect upon two-thirds of the population, health insurance would mean a tremendous gain in public health.

Conclusion: Health insurance of wage-earners means a long step forward in social progress.

The State's Duty Is Clear. There is no denying the fact that the loss of earnings due to illness reduces more wage-earning families to destitution than any other cause, and when this cost falls entirely upon the worker, as it does in most instances, it creates an economic dependency which forces him to seek charity and financial assistance, or avoid by any means at his command the meeting of the just obligation. This condition is not conducive to a contented people and cannot permanently continue.

It is sincerely hoped that the legislature will give consideration to the vital questions and enact a compulsory law which will include in its terms the worker and his family.

4. Compulsory Workmen's Compensation Law

Nearly every State in the Union, including Nevada, which was one of the pioneers, has adopted the principles of workmen's compensation and it is accepted everywhere without debate as being a sound and scientific method of meeting industry's obligation to the unfortunate worker who is injured during the course of employment. There are only a few who realize that the benefits of this genuinely humane legislation are so limited in its application. Less than one-third of the workers in Nevada come under the present law, due to certain exclu-

to the provisions of the act which enable the disinterested to reject its terms.

growing Tendency for Compulsory Laws. There is a growing tendency to apply the law to every class of workers and make its compulsory by every employer. Twelve States have already compulsory features, some of which are limited to the "extra-hazardous" occupations, obliging the employer and the employee to the terms of the law. This tendency is based upon the same logic which determined the passage of optional compensation to the duty of the State and of industry to extend protection to those persons who are injured in the course of employment. There can be no distinction between the result of an injury to the death of a plowman, a delivery-wagon driver, and a miner, an axiom so self-evident that no argument is needed to convince any person of the fact. It cannot be said that the relative risk is a legitimate ground for exclusion, or right to exception, if the cost rates are lowered in proportion to the liability of a given class or a certain industry are exceptionally free from industrial accidents the cost is materially less than in those which are "extrahazardous."

General deductions which must be reached as to the reasons for certain industries and occupations, and allowing the rejection of the law, is the personal opposition of those individuals who are in a privileged industry.

Why Agriculture Enjoys a Special Privilege. The one industry which enjoys special privileges in the way of exemptions is agriculture. It appears to be no logical reason for this condition. The statistics of every European nation, supplemented by statistics which have been gathered in this country, indicate that agriculture is highly dangerous.

In California the report of the industrial accident commission shows that of the 678 fatal accidents reported that 62, or 9.1 per cent, were in agricultural pursuits, and the reporting of agricultural accidents is recognized as less complete than for other industries.

Why the Employers in Nevada. In a list of questions submitted to the employers of labor in Nevada by the Labor Commissioner, one question included was the subject of "Compensation for Injured Employees" under which caption the following questions were asked:

1. Has your firm elected to accept the terms of the Nevada Industrial Insurance Act?

2. Do you believe that the classes of employees enumerated in the following section of the act should be excluded from the provisions of the law? "Sec. 43. This act shall apply to all employers of labor in the State of Nevada and their employees, independent of employees, but excludes any employee engaged in farm or agricultural labor, stock or poultry raising, or household domestic service."

3. Should the Nevada Industrial Act be compulsory or optional?

Answers were received from 825 employers, the major portion of

ing of their existence, financial support is not freely given. The scope of activity and measure of benefits can be clearly seen. As well in the first organization of any commission to lay its foundations securely before attempting to expand the work to its full limitations, but to remain permanently in the initiatory stage. Maintaining a natural growth will very soon and quite properly bring upon the commission a train of dissatisfaction from the people. It is intended to benefit, and dishearten those who are attempting to administer its provisions.

Even on the work of a labor commission in a broader field than that provided by the legislature is, of course, impossible, and even the duties already outlined is equally impossible without proper cooperation and adequate appropriations. The past appropriations for this commission have been only \$2,500 per annum, which is divided into three channels. The commissioner's salary is \$1,200; the services of a stenographer amounts to \$1,200; and a \$700 is thus available for expenses. From this \$700 must be deducted office expenses such as stamps, stationery, supplies, etc., as well as railroad fare and traveling expenses of the commissioner engaged in the work of conciliation and mediation, investigation, reports, inspection, collection of statistics, and the numerous duties which arise. The amount is greatly below what is needed. The creation of the only assistance possible to secure for the commissioner the services of a stenographer at a salary which prohibited the employment of a person who would be especially qualified to summarize and compile the tables and graphics which must of necessity be secured from the mass of figures which are secured from the various sources. In order to cope with this lamentable situation the commissioner has literally worked night and day in the office which was necessary to make this report possible, which falls short of the standard that is desired.

Working Force is Essential. Under the present law prescribed duties of the Labor Commissioner, which should unquestionably be further extended, a proper administration of the act requires a working force of at least two persons in addition to the commissioner himself. A proper analysis and interpretation of the statistics gathered really require highly expert service, because the schedules, the scheming of tabulations, the securing of ratios and averages, and the presentation of the final results in an intelligible form, is vastly more complex and exacting than the ordinary stenographic work. For these reasons the appropriate help should take into consideration the possibility of employing a person whose qualifications are a combination of both stenographic and statistical ability.

Inspector is Needed. In the work of law enforcement, collection of statistics, and sanitary and safety inspection, it is very evident that the commissioner have the services of a traveling inspector. Without appropriations for travel, and being fully engaged in the duties of two commissions of which he is a member, the Labor Commissioner has been obliged to practically forego some of the most important functions of the office.

In the past this office has been obliged to rely chiefly upon complaints being reported by the workers in establishments in which the laws are being violated, as these are usually the only persons who, aside from the employer, can be aware of such violations. This difficulty of this method is that employees will not make complaints, either through fear of their position or that they will be obliged to appear in court as witness in the case. During the past year dismissals have followed the reporting of violations in this State in more cases than one. Under this mode of law enforcement, which is merely a mockery, the labor laws of the State soon come to have almost a farcical significance.

There is a wide difference between haphazard prying into the affairs upon hearsay or ex parte testimony, and upon authorized scientific and open investigation which relies not on conjecture or hearsay, but upon first-hand evidence based on personal knowledge of actual conditions. Moreover, the collection of statistics cannot be fully accomplished through the medium of correspondence, nor can a complete and intelligent survey of any industrial condition be properly investigated without a personal observation of the material facts. If the commission is to serve adequately in fostering and promoting the welfare of the wage-earners, and in the collection of statistics for the information of the people and their representatives, the services of a traveling inspector is indispensable.

Labor Commissioner Should Supervise Work. The Labor Commissioner should, of course, not only be able to organize and supervise the work of his department, but he should be required to engage himself in the detail and routine office work, in so far as time and other duties will permit, in order that he may fully understand the vast mass of information collected and be able to draw reliable conclusions as to the important facts and tendencies shown therein. This has been the customary practice, but much of the time of the Labor Commissioner is taken up in the work of the Industrial Insurance Commission, of which he is a member and which requires by law 15 days services per month, and in the executive duties which devolve upon him in connection with the Labor Commission work. He cannot, therefore, perform all of the varied and complex work which should properly be distributed to a statistician and an inspector. The work obviously requires an organization especially adapted thereto, working under the immediate supervision of the commissioner, and not handicapped by the burdens of the past.

A State falls short of justice to that large proportion of its citizens who must work for a daily wage when by niggardly appropriations it prohibits a scientific presentation of the vital problems of labor which its legislators must meet. For all of the above reasons it is respectfully requested that an appropriation be granted which will be sufficient to accomplish the aims of the law.

In Conclusion

With a full appreciation of the responsibilities which devolve upon the personnel of the commission in the execution of their duties, it may be truthfully stated that the future success of this commission lies primarily in the hands of those who are privileged to serve the people

in the legislative chambers and prescribe the limitations of public service. That the members of the senate and assembly will give the needs of the Labor Commission the sympathetic consideration to which it is entitled, the writer has no reason to doubt, and it is with a feeling of confidence and with a spirit of cooperation, looking toward the industrial peace and material welfare of the State, that the above recommendations are respectfully but urgently presented.





STATE OF NEVADA

BIENNIAL REPORT

OF THE

STATE BOARD OF HEALTH

For the Period Ending December 31, 1918

S. L. LEE, M.D., Secretary



CARSON CITY, NEVADA
STATE PRINTING OFFICE—JOE FARNSWORTH, SUPERINTENDENT
1919



STATE BOARD OF HEALTH OF NEVADA

W. H. HOOD, M.D., President.....Reno, Nevada
G. F. RUEDIGER, M.D.....Reno, Nevada
S. L. LEE, M.D., Secretary.....Carson City, Nevada

LETTER OF TRANSMITTAL

OFFICE OF
SECRETARY OF THE STATE BOARD OF HEALTH,
CARSON CITY, NEVADA, January 1, 1919.

To the Honorable EMMET D. BOYLE, Governor of Nevada.

SIR: In compliance with section 4 of an Act to create a State Board of Health, approved March 27, 1911, I have the honor to submit herewith my biennial report for the years 1917-1918.

Very respectfully,

SIMEON L. LEE,
Secretary State Board of Health.

REPORT OF STATE BOARD OF HEALTH

At a meeting of the State Board of Health held in Carson City, Nevada, on September 11, 1917, in compliance with an Act entitled "An Act requiring the examination of all school children to ascertain if they have defective eyesight or hearing, or diseased teeth, or if they are addicted to mouth-breathing," approved March 24, 1917 (Stats. 1917, p. 355), the following instructions were issued, to be sent to the teachers in the State, with a sufficient number of Snellen's test-cards to supply each teacher with one, together with the necessary notices to parents, blanks, etc.:

INSTRUCTIONS FOR THE EXAMINATION OF SCHOOL CHILDREN'S EYES, EARS, ETC., ISSUED BY THE STATE BOARD OF HEALTH OF NEVADA, SEPTEMBER, 1917.

THE NOSE AND THROAT ANATOMICAL CONSIDERATIONS

The upper respiratory region consists of the nose, mouth and pharynx. Teachers are reminded that the pharynx is the cavity communicating with the mouth and nose in front, and the esophagus and larynx below. Its walls are composed of fibrous and muscular tissue. It may be likened to a bag, the mouth of which is held open at the top by bony attachments to receive food, and which narrows down below to a tube (the esophagus), the latter in turn transmitting the food to the stomach. By the throat is meant the lower part of the pharynx (below the level of the palate) and the upper end of adjacent larynx and esophagus. The palate is the roof of the mouth, and floor of the nose, the soft palate being composed of muscle, connective tissue and epithelium covering the hard palate (bone). The familiar little mass of tissue hanging from the back of the palate is the uvula. The region where the posterior end of the nasal cavity communicates with the pharynx is appropriately termed the nasopharynx, and it is here where adenoid growth, when they exist, are found.

The middle ear communicates with the throat by means of the eustacian tube, whose orifice is on the side wall of the pharynx, about one-third of an inch from its hind end and slightly above the level of the hard palate.

In early infancy the posterior opening of the nose measures but one-fourth of an inch in height and one-third of an inch across both nostrils, such remarkably small diameters rendering it very liable to obstruction. The orifice of the eustacian tube is situated on a level with the palate instead of just above this level, and this lower location gives a more horizontal direction in the tube itself as it passes outward, explaining the secondary infection of the ear so frequently seen in children suffering from adenoids.

A certain form of connective tissue is termed lymphoid tissue because it is composed principally of packed masses of small, round cells known as lymphocytes, because it is found along the course of the lymphatic system. The lymphoid tissue, the aggregations of which are known as lymphatic glands, is found generally through the body, but particularly where it can act as a filter and destroyer of bacteria in regions exposed to infection. Thus the lymphatic vessels of the mouth, arm and leg drain into clusters of lymphatic glands situated in the neck, armpit and groin, respectively, whose soreness and swelling are a familiar experience when a sore throat, vaccination on the arm, or infected wound of the foot occurs. Similar lymphatic glands in the chest and abdomen filter and kill bacteria invading the lungs and intestines. Inflammation of a lymphatic gland is known as adenitis, and in the neck this is known as cervical adenitis.

Certain masses of lymphoid tissue, the existence of which is apparently purposeless, are found in the upper throat. They consist of the well defined tonsils on either side, a small patch on the upper surface of the tongue back at its

base, and another patch on the roof of the pharynx. The latter two are sometimes called the lingual and pharyngeal tonsils, respectively, and it is because the pharyngeal tonsil exists in every one that its overgrowth (the so-called adenoid) is so common. Rather curiously, it will be noticed that this lymphoid tissue is thus disposed on the roof, floor and sides of the throat entrance, making an incomplete ring around it.

The tonsils are situated at the junction of the mouth and the pharynx, and implanted between two small muscles extending vertically and standing out like bands, plainly visible to the observer. These muscles pass down from the palate, one in front of the tonsil to the tongue, and the other behind the tonsil to the pharynx. They are frequently termed, respectively, the anterior and posterior pillars. Each tonsil is covered by mucous membrane and possesses normally a pale pink color and smooth surface. Its base, which is against the wall of the throat, is rather close to the internal carotid artery.

The tonsils are usually plainly visible, although occasionally they are so small and so deeply imbedded in the recess between the pillars that inspection is difficult. Choking, gagging, or the voluntary contraction of the throat muscles to produce loud, high pitched sounds, moves them inward and forward into better view.

To examine a child's throat, a tongue depressor may be used, but it is seldom necessary. Without it the child may simply be asked to open his mouth, a procedure which gives a good view of the throat, if he does not elevate the base of the tongue by reason of nervousness or voice production. A surer way, which, however, must be carried out exactly, is to ask the child to open the mouth wide, put the tongue out as far as possible and say, Ah (pronouncing the A as in cat, not as in star). To induce a hesitating child to open his mouth, a joking suggestion to take a bite of pie and put the tongue "way out" suffices.

Adenoids, when they exist, may attain varying sizes up to that of an olive, and, in the latter case, may block up the posterior opening into the pharynx. The fact that adenoids, when they exist, do not necessarily obstruct the posterior nasal opening should be remembered.

Adenoid tissue is of varying consistency, being ordinarily soft, spongy, and very well supplied with blood vessels which bleed easily. If the adenoid mass is congested by sluggish circulation, it is swollen and of a pulpy or jelly-like consistency. Sometimes the mass is quite firm because of the presence in it of tough, fibrous tissue, and this is particularly true of old adenoids existing in children over seven years of age. Such firm adenoids frequently present a surface which is irregular with deep furrows and longitudinal ridges like sweetbread.

Adenoids may appear as early as infancy. They often become quite evident by the third or fourth year, and reach their maximum at the age of six or seven; at ten the masses begin to shrink considerably, with a corresponding lessening of the symptoms.

The association of adenoids and enlarged tonsils (which are really the product of chronic inflammation) has been already mentioned. Most cases of enlarged tonsils show adenoids, and about one-third of adenoid cases show enlarged tonsils.

EVIDENCE AND EFFECTS

Nasal obstruction existing at the time of the child's physical examination is easily shown by asking the child to breathe through the nose. Curiously enough, this simple request is usually imperfectly understood by children, and time is saved by showing the child in pantomime what is expected: "Take a deep breath like this; that is right; now shut your mouth" (then gently press one nostril closed, then the other, while the child is breathing deeply). Instead of complete obstruction, there may be partial obstruction evidenced by a hissing or whistling sound through the nose.

Obstruction of the nose in children may be caused by large adenoids, by small adenoids plus an acute cold in the head, by nasal polyps, by deflected nasal septum, by injury to the nose, or by the lodgment of a bean or other foreign body, or by nasal diphtheria. Ordinarily nasal obstruction is by far the most frequent form, and is the only one here considered.

The diagnosis of adenoids is made because of the existence of certain symptoms and secondary effects rather than on the actual demonstration of the mass itself. This is so because the symptom group just mentioned is practically

unmistakable, and because the viewing or feeling of the adenoids is a disagreeable proceeding to a child.

GROUP 1. *Immediate Effects of Nasal Obstruction.*

1. Mouth breathing.
2. Nasal catarrh.
3. Depressed mental activity from lack of air.

GROUP 2. *Defects which are the Characteristic Results of Adenoids.*

1. Mouth breathing by day, and mouth breathing and snoring by night.
2. Chronic nasal catarrh.
3. Secondary catarrh of the middle ear, causing defective hearing and a liability to acute inflammation.
4. Swollen bridge of the nose.
5. High, narrow palate.
6. Irregular projecting teeth.
7. Poorly developed upper jaw.
8. Chronic inflammation of the throat (granular pharyngitis). The continued mouth breathing irritates the posterior wall of the throat, so that gradually small granulations are seen studding the reddened surface.
9. Thick catarrhal voice of a "wooden" quality and lacking resonance. The letters "m" and "n" become "eb" and "ed." "Sprig is cobig" (spring is coming) is the time honored illustration of this condition.
10. Dull apathetic facial expression. This is due to the mental dullness which in turn causes a poor nervo-muscular development, particularly of the muscles of facial expression.

INSTRUCTION FOR THE EXAMINATION OF SCHOOL CHILDREN'S EYES, EARS, ETC.

Do not expose the card except when in use, as familiarity with its face leads children to learn the letters "by heart."

First grade children need not be examined.

The examinations should be made privately and singly.

Children already wearing glasses should be examined with such glasses properly adjusted on the face.

Place the "Vision Chart for Schools" (Snellen's) on the wall in a good light; do not allow the face of the card to be covered with glass.

The line marked XX (20) should be seen at twenty feet; therefore place the pupil twenty feet from the card.

Each eye should be examined separately.

Hold a card over one eye while the other is being examined. Do not press upon the covered eye, as the pressure might induce an incorrect examination.

Have the pupil begin at the top of the test-card and read down as far as he can, first with one eye and then with the other.

FACTS TO BE ASCERTAINED

1. Does the pupil habitually suffer from inflamed lids or eyes?
2. Does the pupil fail to read a majority of the letters in the number XX (20) line of the Snellen's test types with either eye?
3. Do the eyes and head habitually grow weary and painful after study?
4. Does the pupil appear to be "cross-eyed?"
5. Does the pupil complain of ear-ache in either ear?
6. Does the matter (pus) or a foul odor proceed from either ear?
7. Does the pupil fail to hear an ordinary voice at twenty feet in a quiet room? Each ear should be tested by having the pupil hold his hand over first one ear, and then the other. The pupil should close his eyes during the test.
8. Is the pupil frequently subject to "colds in the head" and discharges from the nose and throat?
9. Is the pupil an habitual "mouth breather?"

If any affirmative answer is found to any of these questions, the pupil should be given a printed card of warning to be handed to the parent, which should read as follows:

NOTIFICATION TO PARENTS

Public Schools.....Nevada,19.....
Mr.....

DEAR SIR: It has come to our notice that your..... needs medical attention relative to....., and we would suggest that you place..... under the care of a physician as early as possible, so that..... will be in better condition, physically, to continue..... studies.

Respectfully

Respectfully,

Principal or Teacher.

The findings of the examination should be entered on a blank similar to the following, and kept on file by the teacher of the school the pupil attends, or by the principal of the schools.

(Some of the teachers have forwarded these examination blanks to the Secretary of the State Board of Health. This should not be done, as the findings of the teacher in the examination are evidence of his or her justification in sending the notification card to the parents.)

STATE BOARD OF HEALTH OF NEVADA

REPORT OF TEACHER

Town..... **District**..... **School**.....

Remarks	
Oase reported to parents.....	.....
Teeth good fair, poor.....	.....
Throat mouth breathing.....	.....
Nose colds, catarrh.....	.....
Ear discharge, odor.....	.....
Left ear.....	.....
Hearing (feet)	.....
Right ear.....	.....
Head, colds daily or weekly.....	.....
Eyes pain, itaqueued after use.....	.....
Lids inflamed.....	.....
scaly, swollen.....	.....
Eyes inflamed, dis-charged, squint.....	.....
Left eye.....	.....
Distant vis-age (feet)	.....
Right eye.....	.....
Are.....	.....
Name	.....

VISION AND HEARING TESTS BY TEACHERS

If only an eye disease is suspected, the words, "ear, nose and throat" should be crossed off; if only an ear disease is suspected, the words "eye, nose and throat" should be crossed off; if it is only a nose and throat disease, the words "eye" and "ear" should be crossed off.

It will be observed that these cards are non-obligatory in their nature. They do not require anything of the parent, who is at perfect liberty to take notice of the warning card or not, as he sees fit. They simply warn the parent that a probable disease exists, thus placing the responsibility upon the parent.

Nevertheless, if parents neglect the warning thus conveyed, the teacher should, from time to time, endeavor to convince such parents of the advisability of medical counsel. Teachers are urged to impress upon pupils and parents the necessity for consulting reputable physicians.

These tests should be made annually at the beginning of the fall term, and should include all children above the first grade.

Each teacher should examine all the children in his or her own room, and should report the results of such examination to the principal, such report to be signed by the examining teacher.

THE CARE OF THE TEETH

What are the teeth for? Not merely for ornament. Their chief use is to prepare the food for the stomach, to grind the food and mix it with saliva. Food which is not thoroughly chewed causes indigestion and constipation.

How long should the teeth last? To the end of life.

How do we lose them? By decay and loosening.

What causes teeth to decay? Bits of food and candy sticking to the teeth; also a poor physical condition.

Where does the food lodge? All along the edge of the gums, between the teeth and in the crevices of the grinding surfaces.

Can decay be prevented? Yes, to a large extent.

How can decay be prevented? By scrubbing the teeth thoroughly with a toothbrush, toothpowder, and water; and by keeping up the general health.

How often should the teeth be cleaned? At least twice a day, after breakfast and at bedtime. Better after each meal.

Should the gums be brushed? Yes. Moderate friction helps to keep them healthy.

How often should toothpowder be used? At least once a day, at bedtime.

TO PARENTS

You are reminded of the necessity for early care of children's teeth. With such care the teeth may be preserved throughout life. This will not only save much inconvenience and discomfort in later life, but it may enable the child in the meantime to live, a more vigorous, and hence a successful life.

The condition of the teeth has much to do with the general health. The following cautions, abbreviated from those issued to teachers and school physicians by the State Board of Health, are commended to your attention:

Unclean mouths promote the growth of disease germs, and cavities in the teeth are centers of infection.

Irregularities of the teeth, especially those which make it impossible to close the teeth properly, thus leading to faulty digestion and faulty breathing, should receive careful treatment.

The first permanent molars are perhaps the most important teeth in the mouth. They come at about the sixth year immediately following the temporary teeth, and are the most frequently neglected because they are often mistaken for temporary teeth.

It should be known that decay of the teeth is caused primarily by the fermentation of starchy foods and sugars, and the greatest factor in preventing disease of the teeth is the removal of food particles by frequent brushing. Children should be prevented from eating crackers and candy between meals, and when possible the teeth should be cleaned after eating. Inspection of the teeth by a dentist should be made at least once or twice a year.

Your attention is also called to the prevalence of maladies of the nose and throat.

The health of a child and his ability to do his school work may be seriously impaired by the presence of adenoid growths. When a child shows obstruction of the nose by mouth-breathing, snoring, continual discharge, or recurrent ear trouble, adenoids should be suspected.

Enlarged tonsils, recurrent tonsillitis and enlargement of the glands in the neck also constitute a serious handicap to the child. Either condition must be remedied before he can have a fair chance in the world, and the earlier the better. The family physician should be consulted, and the child given such treatment as he may advise.

Owing to the difficulty in securing the names and addresses of the teachers throughout the State, the Board was unable to send the instructions, test-cards and other material to them, until October, 1917.

The Board realizes that these instructions to the teachers convey no "new" truths to the scientific world, but many of our teachers are young and inexperienced, hence the publication of the foregoing is designed more particularly for the benefit of the children under their care than with any thought of "enlightening the world."

SOCIAL HYGIENE

Since the opening of the cantonments throughout the United States for the reception of our newly-made armies, the necessity for taking steps to control the great social evil became imperative, and with that end in view the Chamberlain-Kahn Act was passed by Congress.

In view of the fact that Nevada is a signatory to the Act it is deemed advisable to publish the same, together with the Rules and Regulations promulgated by the Secretary of the Treasury.

**The Chamberlain-Kahn Act No. 193 Passed by the 65th Congress,
Approved July 9, 1918**

INTERDEPARTMENTAL SOCIAL HYGIENE BOARD

That there is hereby created a board to be known as the Interdepartmental Social Hygiene Board, to consist of the Secretary of War, the Secretary of the Navy, and the Secretary of the Treasury as ex officio members, and of the Surgeon General of the Army, the Surgeon General of the Navy, and the Surgeon General of the Public Health Service, or of representatives designated by the Secretary of War, the Secretary of the Navy, and the Secretary of the Treasury, respectively. The duties of the board shall be: (1) To recommend rules and regulations for the expenditure of moneys allotted to the States under section five of this chapter; (2) to select the institutions and organizations and fix the allotments to each institution under said section five; (3) to recommend to the Secretary of the Treasury, the Secretary of War, and the Secretary of the Navy, such general measures as will promote correlation and efficiency in carrying out the purposes of this chapter by their respective departments; and (4) to direct the expenditure of the sum of \$100,000 referred to in the last paragraph of section seven of this chapter. The board shall meet at least quarterly, and shall elect annually one of its members as chairman and shall adopt rules and regulations for the conduct of its business.

SEC. 2. That the Secretary of War and the Secretary of the Navy are hereby authorized and directed to adopt measures for the purpose of assisting the various States in caring for civilian persons whose detention, isolation, quarantine, or commitment to institutions may be found necessary for the protection of the military and naval forces of the United States against venereal diseases.

SEC. 3. That there is hereby established in the Bureau of the Public Health Service a Division of Venereal Diseases, to be under the charge of a commissioned medical officer of the United States Public Health Service, detailed by the Surgeon General of the Public Health Service, which officer while thus serving shall be an Assistant Surgeon General of the Public Health Service, subject to the provisions of law applicable to assistant surgeons general in charge of administrative divisions of the District of Columbia of the Bureau of the Public Health Service. There shall be in such division such assistants, clerks, investigators, and other employees as may be necessary for the performance of its duties and as may be provided for by law.

SEC. 4. The duties of the Division of Venereal Diseases shall be in accordance with rules and regulations prescribed by the Secretary of the Treasury. (1) To study and investigate the cause, treatment and prevention of venereal diseases; (2) to cooperate with State boards of departments of health for the prevention and control of such diseases within the States; and (3) to control and prevent the spread of these diseases in interstate traffic; *provided*, that nothing in this chapter shall be construed as limiting the functions and activities of other departments or bureaus in the prevention, control and treatment of venereal diseases and in the expenditures of moneys therefor.

SEC. 5. That there is hereby appropriated, out of any money in the treasury not otherwise appropriated, the sum of \$1,000,000, to be expended under the joint direction of the Secretary of War and the Secretary of the Navy to carry out the provisions of section two of this chapter; *provided*, that the appropriation herein made shall not be deemed exclusive, but shall be in addition to other appropriations of a more general character which are applicable to the same or similar purposes.

SEC. 6. That there is hereby appropriated out of any moneys in the Treasury not otherwise appropriated, the sum of \$1,400,000 annually for two fiscal years, beginning with the fiscal year commencing July first, nineteen hundred and eighteen, to be apportioned as follows: The sum of \$1,000,000, which shall be paid to the States for the use of their respective boards or departments of health in the prevention, control, and treatment of venereal diseases; this sum to be allotted to each State in accordance with the rules and regulations prescribed by the Secretary of the Treasury, in the proportion which its population bears to the population of the continental United States, exclusive of Alaska and the Canal Zone, according to the last preceding United States census, and such allotment to be so conditioned that for each dollar paid to any State the State shall specifically appropriate or otherwise set aside an equal amount for the prevention, control and treatment of venereal diseases, except for the fiscal year

ending June thirtieth, nineteen hundred and nineteen, for which the allotment of money is not conditioned upon the appropriation or setting aside of money by the State, provided that any State may obtain any part of its allotment for any fiscal year subsequent to June thirtieth, nineteen hundred and nineteen, by specifically appropriating or otherwise setting aside an amount equal to such part of its allotment for the prevention, control and treatment of venereal diseases; the sum of \$100,000, which shall be paid to such universities, colleges, or other suitable institutions, as in the judgment of the Interdepartmental Social Hygiene Board are qualified for scientific research, for the purpose of discovering and developing more effective educational measures in the prevention of venereal diseases, and for the purpose of sociological and psychological research related thereto.

Sec. 7. That there is hereby appropriated, out of any money in the Treasury not otherwise appropriated, the sum of \$300,000 for the fiscal year ending June thirtieth, nineteen hundred and nineteen, to be apportioned as follows: The sum of \$200,000 to defray the expenses of the establishment and maintenance of the Division of Venereal Diseases in the Bureau of the Public Health Service; and the sum of \$100,000 to be used under the direction of the Interdepartmental Social Hygiene Board for the purpose for which any of the appropriations made by this chapter are available.

The Nevada State Board of Health, realizing the importance of this Act, and supported by the advice of your Excellency and that of the Attorney General, wired its acceptance to Dr. Rupert Blue, Surgeon General of the United States Public Health Service, and on the 16th day of November, 1918, received its quota, \$800, from the Interdepartmental Social Hygiene Board in accordance with the regulations promulgated by the Secretary of the Treasury.

Very soon after the consummation of the contract between the United States Public Health Service and the State Board of Health of Nevada, the question of the jurisdiction of the latter in certain cases arose.

The local health officer of White Pine County was directed by the State Board of Health to investigate a case called to its attention by the health authorities of both California and Washington. The District Attorney of White Pine County gave as his opinion that the State Board of Health had exceeded its authority, as it was practically but a board of vital statistics. The Secretary of the Board submitted the matter to the Attorney General for his opinion, which was as follows:

OFFICE OF THE ATTORNEY GENERAL

CARSON CITY, NEVADA, November 13, 1918.

DR. S. L. LEE, *Secretary Nevada State Board of Health.*

DEAR DOCTOR: I am in receipt from you of a letter of October 24th from Dr. F. F. OWENS, of Ely, White Pine County, Nevada, together with accompanying documents from you, all of which are herewith returned.

It appears therefrom that by Public Act No. 193, of the 65th Congress, provision was made for the regulation of certain diseases, and that the State of Nevada has entered into a contract with the United States to carry out the provisions of said Act, and has received its quota of money appropriated by said Act.

Under these circumstances your State Board of Health has the right to make regulations concerning the segregation and treatment of persons professionally engaged in this business, suffering from the diseases specified.

Very respectfully,

E. T. PATRICK, *Deputy Attorney General.*

As in this case, so it was during the epidemic of rabies in the years of 1914-15 and 1916.

In that case the Attorney General held that the State Board of Health

was not invested with power to establish quarantine against diseased animals invading healthy zones, that such power was vested in the Boards of County Commissioners alone.

Under such conditions it is quite apparent that the State Board of Health cannot be regarded as a potent instrument for the protection of the public health; therefore its powers should be so clearly defined as to leave *no doubt* of its jurisdiction in all health matters.

The Rules and Regulations promulgated by the Secretary of the Treasury are as follows:

REGULATIONS

Promulgated by the Secretary of the Treasury, under which State Boards or State Departments of Health receive the allotment of funds provided in Section 6, Chapter XV, of the Act approved July 9, 1917, entitled "An Act making appropriations for the support of the army for the fiscal year ending June 30, 1919."

The act provides that \$1,000,000 shall be distributed to the States for the use of their respective boards or departments of health for the prevention, control and treatment of venereal diseases, this sum to be allotted to each State, in accordance with rules and regulations prescribed by the Secretary of the Treasury, in the proportion which its population bears to the population of the continental United States, exclusive of Alaska and the Canal Zone, according to the last preceding United States census.

State Boards or Departments of Health receiving their respective allotments shall agree to the following cooperative measures under which their appropriation shall be expended:

1. Put into operation through a legislative enactment or a State Board of Health regulation having the effect of law, regulations in conformity with the suggestions approved by the Surgeon General of the Army, Navy, and United States Public Health Service, for the prevention of venereal diseases. The minimum requirements of these rules are:

(a) Venereal diseases must be reported to the local health authorities in accordance with state regulations approved by the United States Public Health Service.

(b) Penalty to be imposed upon physicians or others required to report venereal infections for failure to do so.

(c) Cases to be investigated, so far as practicable, to discover and control sources of infection.

(d) The spread of venereal diseases should be declared unlawful.

(e) Provision to be made for control of infected persons that do not cooperate in protecting others from infection.

(f) The travel of venereally infected persons within the State to be controlled by State Boards of Health by definite regulations that will conform in general to the interstate regulations to be established.

(g) Patients to be given a printed circular of instructions informing them of the necessity of measures to prevent the spread of infection and of the importance of continuing treatment.

2. An officer of the Public Health Service shall be assigned to each State receiving allotments for the general purpose of cooperating with the state health officer in supervising the venereal-control work in the State, the officer to be selected by the state health authorities and to be approved and recommended for appointment by the Surgeon General of the Public Health Service. The salary of this officer will be paid by the State out of the funds made available from the allotment, except a nominal sum of \$10 per month, which will be paid by the United States Public Health Service. In those States where a bureau of venereal diseases has already been established, with a full-time medical officer in charge, the present incumbent may be recommended for appointment by the state health officer, and with the approval of the Surgeon General, United States Public Health Service, he will be appointed as an officer of the Public Health Service. The general plan of work for the State Bureau of Venereal Diseases will be:

(a) Securing reports of venereal infections from physicians and others required to report, in accordance with state laws;

(b) Suppressive measures, including the isolation and treatment in detention hospitals of infected persons who are unable or unwilling to take measures to prevent themselves becoming a menace to others, the establishment of free clinics for the treatment of venereal diseases, and the elimination of conditions favorable to the spread of venereal infections.

(c) Extension of facilities for early diagnosis and treatment through laboratory facilities for exact diagnosis and scientific determination of condition before release as noninfectious, in accordance with the standardized procedure that will be prescribed by the United States Public Health Service.

(d) Educational measures to include informing the general public, as well as infected individuals, in regard to the nature and manner of spread of venereal diseases and the measures that should be taken to combat them.

(e) Cooperation with local civil authorities in their efforts to suppress public and clandestine prostitution. The clinics referred to under (b) will form centers from which the other measures may be conducted by discovering the presence of infections, the securing of data for enforcing the regulations for reporting these diseases, and the institution of educational measures appropriate to particular communities. The immediate reduction in venereal-disease foci resulting from clinic treatment will result in a marked decrease in the prevalence of such diseases in both the military and civil population.

(f) Accurate detailed records must be kept of all the activities of the venereal-disease work. These will include careful records of each case treated, amount of arsphenamine used, final results, and disposition made of patients. Copies of these records must be forwarded to the Surgeon General, United States Public Health Service, as a report at such intervals as they may be requested, and in accordance with instructions regarding the form of report.

3. Local funds that may be available, or that may become available from legislative appropriations or any other source for venereal-disease control, shall be used by the state or city health authorities having jurisdiction for the extension of the work, and such local funds must not be conserved through the expenditure of the funds that are allotted by Congress through the United States Public Health Service.

4. In extension of the educational measures of the State's health authorities and its bureau of venereal diseases shall exert their efforts and influence for the organization of a state venereal-disease committee that will be unofficial in character, but a valuable cooperative agency for furthering the comprehensive plan for nation wide venereal-disease control.

5. The state health authorities shall take such measures as may be found practicable and decided upon in conference between the Public Health Service and State Board of Health representatives for the purpose of securing such additional legislation as may be required for the development and control of the spread of venereal infections. Action shall be taken to limit or suppress the activities of advertising "specialists" and quacks by prosecuting them under state laws or such other measures as may be applicable and effective.

6. In expending the sum allotted a State, the rules and regulations to be promulgated by the Interdepartmental Social Hygiene Board for the expenditure of the \$1,000,000 civilian quarantine and isolation fund under control of the Secretary of War and Secretary of the Navy shall be given consideration by Public Health Service and State Board of Health representatives, so that the military necessities of each particular State may receive the consideration due its relative importance, and so that funds from the two sources may be correlated.

7. The state allotment shall be expended along general standard lines for all States and in accordance with an accounting system to be forwarded by the Interdepartmental Social Hygiene Board, approximately as follows:

(a) For the treatment of infected persons in hospitals, clinics and other institutions including arsphenamine and other drugs, 50 per cent of the allotment.

(b) In carrying out educational measures, 20 per cent.

(c) In carrying out repressive measures, 20 per cent.

(d) In general administration and other activities of venereal-disease control work, 10 per cent.

(This distribution is provisional and subject to modification after conference and agreement between each State and the United States Public Health Service to best meet the needs of the particular State.)

8. In carrying out the general Government program the administrative organization of the United States Public Health Service will be available at all times to State organizations in cooperative work, and assistance will be given to States whenever possible through the detail of employees, the securing of arsphenamine, provide literature for the educational measures, and in such other ways as may be found practicable as the work develops.

W. G. McADOO,
Secretary of the Treasury.

TYPHOID FEVER

During the months of March and September, 1918, epidemics of typhoid fever broke out in Ely and McGill, White Pine County, where thirty or more cases developed in a short period of time. At the request of the Governor, Dr. G. F. Ruediger, Director of the Hygienic Laboratory at Reno, made two trips to Ely and vicinity to make a sanitary survey, and to study local conditions. He made two reports, and submitted them to the authorities of Ely and McGill, respectively, giving the results of his investigations of typhoid outbreaks in those two communities. The reports include certain recommendations which were made to safeguard the communities against the recurrence of similar outbreaks. These reports, together with one from Dr. Ruediger dealing with the subject of typhoid bacillus carriers, and in which is incorporated the discussion of the findings in the investigation of the Ely epidemics of last March and September, are as follows:

UNIVERSITY OF NEVADA,
RENO, NEVADA, September 5, 1918.

Mr. C. B. LAKENAB, *General Manager Nevada Consolidated Copper Company, McGill, Nevada.*

DEAR SIR: The sanitary inspection of the water and milk supplies at McGill, and the epidemiological investigation of the typhoid outbreak made on the 2d instant has led to the following definite results and conclusions:

1. Eight cases of typhoid fever were discovered in McGill between August 9 and August 20.

2. All of these patients have been using water from what is known as the "Domestic Spring supply" and there are no patients who have been using exclusively the water from the "Duck Creek supply."

3. All of the patients have been using milk from the McGill Dairy prior to their illness. This fact, however, is of no significance because there is only one dairy in McGill, and, if they are using fresh milk at all, they must get it from this dairy.

4. A careful sanitary inspection of the so-called "Domestic Spring" and its surroundings showed that the casing of the well-pit is in a dilapidated condition, leaving the well open to all manner of surface pollution. It is noted that the surface drainage from a considerable area is toward the well-pit, and in case of rain, large quantities of surface water must run into the well.

5. It was found further that the soil surrounding this well is being polluted with human excreta, which I found to be deposited less than two feet away from the edge of the well-pit.

6. It was learned that there was a fairly heavy rain in McGill about the end of July or first of August. This gave ample opportunity for the well to have become polluted with the human excreta which are deposited on the ground in the immediate vicinity, and this pollution undoubtedly occurred at that time.

From the foregoing data we can draw the positive conclusion that the outbreak of typhoid fever which occurred in McGill between August 9 and August 20 was due to a pollution of the "Domestic Spring" water with human excreta

on or about August 1. Your local physicians were of the opinion that the infection came from the milk. I am convinced, however, that this is not the case, for the following reasons: It would be a most extraordinary occurrence to have eight persons who are using the "Domestic Spring" water become infected with typhoid fever from the milk, whereas all of the people who are using the "Duck Creek" water escaped infection, although they were using the same milk. That such a thing happened is so extremely improbable that we can rule out, unhesitatingly, the milk as the source of infection. Moreover, the findings of the condition of the well and the soil immediately surrounding it, is sufficient evidence to show that this water is sure to be polluted in times of rain.

This well can and must be made safe by putting in a concrete casing, at least one-foot thick. This casing should start about eight or ten feet below the present water line, and should be brought up four or five feet above the surrounding ground. The well-top should be vaulted over, and provided with a manhole that is closed with a well-fitting iron cover. This cover must be made with a radial arm type of lock so that the arms on the under side of the cover can be thrown out until they project beneath the rim of the manhole. The cover is locked and unlocked by turning a large nut on the upper surface of the cover by means of a large wrench.

The low and open spaces around the casing must be filled in with clay, which must be moistened and thoroughly tamped in close to the casing. The filling-in must be brought up high enough so that the rain and snow water will run away from the well-top, and not toward it. When this filled-in soil has been thoroughly tamped in and has settled, it should be covered with a fairly heavy layer of concrete for a radius of eight or ten feet.

In addition to this I strongly recommend that you enclose the well with a barb-wire entanglement at least six feet high. This barb-wire entanglement should have a radius of about fifteen feet and must be provided with a strong gate that can be securely locked, so that nobody can pollute the surroundings of this well as has been done in the past.

7. The milkhouse at the dairy was found to be in an insanitary condition. The milk bottles are not sterilized in any way and the water that is used for washing and rinsing them is open to all manner of pollution, and is polluted as shown by a bacteriological analysis of a sample collected by me on September 2. This analysis showed that there was more than five colon bacilli per cubic centimeter in this water, and a total of 768 bacteria of all kinds in each cubic centimeter.

A new milkhouse should be built on higher ground and should be supplied with water from the "Domestic Spring" which must be made safe. The milkhouse must be equipped with a modern bottle-washing and sterilizing machine and a modern milk-bottler. Somebody with authority must visit this dairy about once a week, and see to it that the bottles and bottler are properly cleansed and sterilized after having been used.

8. The three or more sewer outlets in McGill do not extend far enough out into the bed of waste water, and should be extended 200 or 300 feet farther.

9. Most of the outside privies are of improper construction, and practically all of the vaults are full and in an insanitary condition. The greatest objection to an out-door privy, in a country where there are flies, is the fact that they are usually so constructed that they are entirely open, giving free access to the flies. An out-door privy in order to be safe against the spread of typhoid fever, must be made fly-proof.

I am requesting the Surgeon General of the United States Public Health Service to send you pamphlets describing the construction of sanitary outside privies.

The contents in many of the vaults at present should be treated with chloride of lime. Wherever possible, the outside privy should be discontinued and flush toilets installed. This latter recommendation applies with even greater force to the toilets in the vicinity of the smelter and various shops. I inspected a number of these and found them to be in a very insanitary condition.

10. The bacteriological analysis of the "Duck Creek" water gave evidence of pollution with colon bacilli in every cubic centimeter of the sample. I presume that most of this is due to animal pollution and not human pollution; but the fact that the water is so open to animal pollution renders it unsafe. I would strongly recommend that you install a chlorine treatment plant for the filtered "Duck Creek" water. The pressure filter which you have apparently does not remove the bacteria from the water because the filtered water gave

just as much evidence of pollution as the unfiltered water. I believe that the chlorine could be administered into the pipes against the pressure which you have, although it might be better to pump the water into a reservoir at a high enough elevation to give you the necessary water pressure in the distributing mains from gravity. Liquid chlorine can be purchased in steel cylinders and is administered at the rate of 0.5 to 0.6 milligram of chlorine per litre of water pumped. It is a thoroughly reliable disinfectant for polluted water, and if not used in excess, does not leave a perceptible taste. All of the drinking water supplied in Reno on the north side of the river is being treated with chlorine.

Very truly yours,

G. F. RUEDIGER,

Director, State Hygienic Laboratory.

UNIVERSITY OF NEVADA,

RENO, NEVADA, September 24, 1918.

MR. A. B. WITCHER, MAYOR, *Ely, Nevada.*

DEAR SIR: The investigation of the typhoid epidemic at Ely, made on the 20th instant, led to the following results:

1. Fourteen cases of typhoid fever appeared in Ely between August 23 and September 13.

2. All of these patients were drinking water from the city supply of Ely, but four of them have been drinking water elsewhere during the month preceding their illness. Two admit having been to McGill once or twice, but stayed only a few hours. One has been working at Ruth, but resides in Ely, and the fourth came from Ward about two weeks prior to being taken sick. The remaining ten drank no water other than that from the public supply at Ely.

3. Twelve of the fourteen patients were getting milk from Moeller's Dairy, but two of these twelve deny having drank any milk except in their coffee and sometimes on breakfast cereals. Two patients deny having received any milk from Moeller's Dairy at their homes. The remaining ten state that they drank milk from Moeller's Dairy quite regularly, and several of them say they have been drinking large quantities of it.

4. There appears to be no other article of food or drink that many of them have been getting in common. Butter, ice-cream, vegetables, bread, and other groceries have been bought almost everywhere in the city, but there is no article among these which has been used in common by a large number of patients.

5. An investigation of conditions at Moeller's Dairy showed that this is a most insanitary place, and not at all suited for producing a safe milk. The milkhouse is built adjoining the barn and is swarming with flies, and is otherwise filthy. The washing and sterilizing of bottles and other utensils appears to be but imperfectly done. The water used for this purpose is taken from a shallow well about eighteen to twenty feet in depth, and located under the west end of the milkhouse, not more than five feet from a manure pile. The well is in no way protected against seepage from the manure pile and barnyard, nor is the top protected against the introduction of filth from the employee's boots. The water in this well is nothing but seepage from the manure pile, mixed with more or less cow's urine. A bacteriological analysis of this so-called water showed it to contain a total of nearly 20,000 germs per cubic centimeter (about 80,000 per teaspoonful), and over 600 disease germs of various kinds per cubic centimeter. These include streptococci, colon bacilli, and other bacteria of intestinal origin. This water is so badly polluted that it is certain to produce intestinal diseases if it were used for drinking purposes, and is certainly responsible for some of the typhoid that has recently developed in Ely. The water from this well must not under any circumstances be permitted to be used again in washing and rinsing the milk utensils, as was indicated in my telegram of Sunday evening.

6. The public water supply at Ely is found to be unsafe for drinking purposes. The source of supply appears to be properly protected and is satisfactory, but the ditch leading along the hillside from the springs to the reservoir is open to pollution and a careful investigation showed that it is being polluted with human excreta. I made a careful inspection of the entire distance and found a great deal of evidence of trespassing along the ditch, and in three different places I found deposits of human excrement along the edge of the ditch. In

addition, I found the remains of decayed bodies of two dead sheep, not more than five or six feet from the edge of the ditch on the uphill side.

It is evident from this inspection that the ditch is not properly protected and the water is being polluted to a considerable extent. I was informed also, by a person who is in a position to know from observation, that the children are in the habit of playing along this ditch, and frequently go in wading and send their dogs in after sticks and other objects that are thrown into the water. Moreover, the children throw in rocks and dirt in an attempt to dam up the water, which rubbish has to be removed at intervals by the caretakers. It is evident, therefore, that the water is polluted, and I am convinced that some of the typhoid in Ely is traceable to the water supply. I collected samples for bacteriological analysis at Mr. Witcher's residence and at the Lincoln Highway Garage. Both of these samples gave evidence of pollution, as is shown by the fact that bacteria of intestinal origin were found in every cubic centimeter of the samples analyzed. The total number of germs per cubic centimeter was over 200 in each sample.

The water supply must be properly protected against the pollution before you can hope to remain free from typhoid fever in Ely. This can perhaps be done most satisfactorily and most economically by piping the water down the canyon from the little reservoir at the head of the ditch, some sixty or seventy-five feet below the springs. The ditch along the hillside could be continued if water is wanted on the hill behind the courthouse for power purposes. The pipe leading from that reservoir, however, should not be connected with the city mains that supply the drinking water. It is the duty of the city of Ely to insist that this safeguarding of the public water supply be instituted at the earliest possible date.

Respectfully yours,

G. F. RUEDIGER.

Director, State Hygienic Laboratory.

TYPHOID BACILLUS CARRIERS

GUSTAV F. RUEDIGER, M.D., DIRECTOR, STATE HYGIENIC LABORATORY,
RENO, NEVADA.

Our knowledge of typhoid bacillus carriers had its beginning in 1902 when Drigalski and Conradi found that the stools of persons who had been in close contact with typhoid patients frequently contained typhoid bacilli, although these individuals were in perfect health and gave no history of having had the disease. Soon afterwards it was discovered that at least one to two per cent of convalescents from typhoid fever continued to excrete the bacilli in the urine and stools for a considerable period of time. Since that time it has been conclusively demonstrated that from two to five per cent of all persons who have typhoid fever become either temporary or chronic bacillus carriers, and that at least two or three of every ten thousand healthy residents of any community are such carriers. In some instances the bacilli have been found in the feces almost in pure culture. In fact, it seems that they may practically replace the colon bacilli of the intestinal tract. On the other hand, there have been found many carriers who are only intermittent disseminators of the bacilli. In most of these cases, the biliary apparatus seems to be the seat of infection, from which the bacilli periodically find their way into the intestine and are discharged with the feces. Many of these carriers continue to excrete typhoid bacilli for twenty to thirty years or more, or presumably throughout the remainder of their lives. Typhoid bacilluria, on the other hand, generally persists only for a short period after convalescence. E. H. Ruediger, however, has recently reported a typhoid carrier of nine years duration who was found, on operation, to have a typhoid abscess of the kidney. A similar case was reported by Ravenel of Wisconsin in 1914.

It is no easy matter to determine what proportion of typhoid outbreaks are due to the activity of bacillus carriers. Some statistics indicate, however, that approximately fifty-five per cent of all typhoid cases in some localities are due to carriers. Nearly all cases of typhoid fever in insane asylums, institutions for the feeble minded and tuberculosis sanatoria where typhoid fever is endemic, are due to the activity of one or more bacillus carriers.

The first positively identified typhoid carrier in this country seems to have been a cook of New York City and vicinity, and frequently referred to as "Typhoid Mary," whose history and activities were carefully investigated by Soper. During a period of ten years she was known to have worked in eight

different families. In seven of these, typhoid fever broke out within a few weeks after her arrival in the household. A total of twenty-six cases with one death are known to have been caused by this individual. As far as is known, this cook never suffered from an attack of typhoid fever, but a bacteriologic examination of her feces showed the presence of typical typhoid bacilli in enormous numbers.

The careful work of the bureau of communicable diseases of the State Board of Health of California has clearly shown that a large percentage of the typhoid outbreaks in that State are caused by the activity of carriers. We find for example that Sawyer, in 1912, detected a carrier on a steamship which was plying out of San Francisco harbor. This carrier was found to have infected twenty-seven persons with whom he had been in contact during a period of four years. Four of these patients had died of the infection. The patient was held in quarantine and given ten injections of an autogenous typhoid vaccine with apparently beneficial results. Four months later, however, when the carrier was released on parole, he infected three more persons on a vessel where he had obtained employment. He was again taken to the hospital where it was finally decided to remove the gall bladder and the cystic duct. These were found, however, to be free from typhoid bacilli, and it was learned later that the operation did not cure him of the carrier state.

In 1914, Sawyer reported an outbreak in which ninety-three persons were infected at a public dinner where food had been infected by a chronic bacillus carrier. In this instance the carrier had infected a quantity of Spanish spaghetti while preparing it. The spaghetti was afterwards baked in a hot oven until it was browned on the surface, but this baking apparently heated the center of the mass only sufficiently to incubate the bacilli and did not effect sterilization.

Cumming reported an outbreak of twenty-nine cases among persons who had attended a country-school picnic at Helm, California, in May, 1915. An epidemiologic investigation of this outbreak brought out the fact that all of those who contracted typhoid fever had eaten more or less of a batch of chocolate ice-cream. Those not partaking of it did not become ill. With two exceptions, everyone of those who had eaten of the chocolate ice-cream—even those eating nothing else—developed first intestinal intoxication and subsequently typhoid fever. The two exceptions were Mrs. Y, who had prepared the ice-cream, and her daughter. Both of these suffered from nausea, vomiting, and diarrhea immediately after the picnic, but did not develop typhoid fever. The further investigation of this family brought out the fact that Mrs. Y had typhoid fever seventeen years previously, and had remained a bacillus carrier, which was proven by a bacteriologic examination of her feces. The daughter never had typhoid fever, but had been vaccinated against the disease two years previously. It was learned further that Mrs. Y's son had had typhoid fever and that four of the six district school teachers who had boarded at her home developed typhoid while living in this household. Additional carriers have been detected in California by Senftner and others.

The Division of Preventable Diseases of the Minnesota State Board of Health likewise has had an extensive experience in detecting typhoid bacillus carriers. During the three-year period ending December 31, 1916, they identified by laboratory examinations sixty-nine carriers of *B. typhosus* and *B. paratyphosus*. Thirty of these were in different state institutions where typhoid fever had been endemic for a number of years. Owing to the mental condition of most of these patients it was impossible to get their past history in regard to typhoid infection, or to determine how many others had been infected by each carrier. The remaining thirty-nine carriers were identified in different sections of the State in the routine investigations to determine the source of various typhoid outbreaks. Some of these were found to have had typhoid fever as long as twenty-five to thirty years ago, and many cases of typhoid had been reported among their associates during the period intervening between the carrier's illness and the discovery of the fact that he had remained a carrier.

TYPHOID CARRIER IN ELY

On March 24, 1918, Dr. W. H. Hood, President of the State Board of Health, received a telegram from the Governor, requesting him to send the State Bacteriologist to Ely to make an investigation of an outbreak

of typhoid fever which was in progress in Ely at that time. In compliance with this request, the Director of the State Hygienic Laboratory proceeded to Ely on March 25th, arriving there on the 26th. An interview with Dr. W. S. Holmquist, health officer for White Pine County, brought out the fact that there had been reported ten cases of typhoid in Ely from January 25th until March 26th. Dr. Holmquist had already made a careful inquiry into the milk supply of every household where typhoid fever had appeared and found that all were getting milk from dairy "M." He then visited dairy "M" and found that they had engaged a new helper in the dairy about January 10th, and upon questioning this man in regard to his past history relative to typhoid fever, he discovered that this man was in the hospital with typhoid during the months of October and November, 1917. Dr. Holmquist immediately ordered him (Mr. T.) to leave the dairy and be confined in the county hospital until the arrival of the State Bacteriologist.

Accompanied by Dr. Holmquist, I visited all the families in which typhoid fever had appeared, in order to gather all data that might possibly throw light upon the source of the infection. All of the patients were found to be using city water and all stated that they were milk drinkers, and had been getting their milk from dairy "M." The city water was considered safe, and this was verified by a bacteriological analysis of a sample collected on March 27th. Practically all of the patients had been eating at their homes, and all denied having been away from Ely for over a month prior to the onset of their illness. Groceries, butter and other supplies for table use were bought at various stores, and it did not appear that they were getting anything in common except the drinking water and the milk. All data gathered, therefore, pointed very strongly to the milk from dairy "M" as being the vehicle of infection. This conclusion was greatly strengthened by the fact that one of the helpers who had recently come into the employ of this dairy was convalescent from typhoid fever only about six weeks before entering the employ of the dairy. This man was therefore given a brisk cathartic to get several specimens of stool for bacteriologic examination. Two specimens of stool and two samples of urine were obtained, and litmus lactose agar plates made from each within an hour after procuring the sample, a portable bacteriological outfit having been taken along from the laboratory. The plates were carried home to the laboratory and incubated for twenty-four hours. None of the plates from the two samples of urine, nor those from the first stool, which was fairly solid, contained any typhoid colonies. The plates from the second sample of stool, however, which was semiliquid, contained more typhoid colonies than colonies of *B. coli*. These organisms were then positively identified as *bacillus typhosus* by both cultural and serologic tests.

It was proven, therefore, that the outbreak of typhoid fever occurring in Ely between January 25th and March 26th was caused by the infection of a milk supply by a dairy helper who was a typhoid bacillus carrier.

One lesson that should be learned from the results of this investigation is to the effect that no person should be allowed to enter into the employ of a dairy until his past history relative to typhoid fever has been ascertained by the local health officer. If a history of typhoid

fever is obtained, there should be made a careful bacteriologic examination of the urine and several specimens of stool to determine the presence or absence of typhoid bacilli. The stools must be obtained with the aid of a cathartic or the findings are more likely to be negative even though the person is a chronic bacillus carrier.

TREATMENT OF TYPHOID BACILLUS CARRIERS

Many remedies have been suggested for the treatment of typhoid bacillus carriers to cure them of the carrier state, but thus far no specific has been found. Attempts have been made to disinfect the intestinal tract by the administration of salol, sodium salicylate, hexamethylenamin and various other intestinal antiseptics, but only with very temporary or indifferent results. In other cases, autogenous typhoid vaccines have been used for a long period of time and some cures have been reported. The experience in California suggests, however, that the cure may have been only temporary, and that the case was not kept under observation long enough to determine whether or not a permanent cure was effected. Removal of the gall bladder and cystic duct has been tried in a number of cases. When the gall bladder contains calculi and is infected with the typhoid bacillus a cure may be expected, and various cures have been reported following this operation. In other cases, however, it seems that the entire biliary apparatus and the liver are infected, and the removal of the gall bladder does not bring about a cure.

More recently Nichol recommended the administration of large doses of sodium bicarbonate to free patients from typhoid bacilli, during the early stages of the carrier state. This treatment is based upon the discovery that rabbit's bile has antiseptic properties for the bacillus typhosus, which properties are apparently due to the high alkalinity of the rabbit's bile. He recommends the administration of two grams of sodium bicarbonate three times a day, if the patient remains a carrier for one month or more after convalescence. The fact whether or not the person continues to be a carrier after convalescence is best determined by obtaining a sample of the duodenal contents by means of the Einhorn duodenal tube, and making bacteriologic plates therefrom.

SPANISH INFLUENZA

It is difficult to determine the date of the appearance of the first case of this disease in Nevada, but the first one diagnosed and reported as such developed in Reno on the 1st day of October, the next at Las Vegas, Clark County, on the 9th, in Elko, Elko County, on the 10th, and in Carson City on the 15th. After the last date it spread rapidly throughout the State until there was scarcely a village or hamlet that did not pay toll to it in human life.

It is impossible to give even an approximate number of persons afflicted with it, as it is not included in our reportable diseases, but it is quite safe to say that there were from four to five thousand.

In uncomplicated cases the fatalities were few, but in those where pneumonia was contributory, the death rate was very high, as will be seen by referring to the death table for 1918.

From several sections of the State appeals came to the State Board of Health for help to care for the sick, as there was an insufficiency of both physicians and nurses to do the work devolving upon the few they had. Among the localities most seriously afflicted and in greatest need

were McDermitt and Lovelock, Humboldt County, Battle Mountain, Lander County, Virginia City, Storey County, and Elko, Elko County. Through Lillian White, of the Pacific Coast Division of the Red Cross, the board was able to send nurses to McDermitt, Battle Mountain, and Virginia City.

This epidemic of influenza resisted all medication to a greater degree than is usually met with in acute diseases of the respiratory organs, and the profession was "up in the air" as to both the genesis and treatment of the scourge. When it first appeared it was quite generally conceded to be caused by the bacillus of Pfeiffer, but that opinion seemed to explode before the end of the epidemic.

The experience of the tens of thousands of physicians who have been making war against the disease has failed to discover a single reliable prophylactic. Several serums have been advocated and used by the profession in this State, but the results have not been such as to warrant any special recommendation for their use, although one quite prominent physician claims to have had the most gratifying success with "horse serum."

The quarantine and mask questions have both been tried; neither one has proven successful. In one of our counties a rigid quarantine was established before a single case had developed, and immediately after the appearance of the first case a mask ordinance was passed and rigidly enforced, yet that county reported a greater number, proportionately, of cases and a larger death rate than any other county in the State.

No matter what the cause of the disease or the course of treatment pursued, there can be no question of doubt but that "fear" so reduced the powers of resistance that many became easy victims, and "fear" should have been entered in the death certificate as the remote cause of death.

Dr. Rupert Blue, Surgeon-General of the United States Public Health Service, recently headed an article of his in the "Herald of the Well Country," on Spanish "Flu" with a fable from the Arabic that is quite in harmony with the foregoing conclusion, and which is as follows: Plague went forth in the land and one met him, asking him if he could stay his cruel hand. Plague answered that he meant to be merciful; he would only take five thousand from the earth. Sometime afterwards these two met again. "So, thou art a liar as well as a murderer," said the other to Plague; "thy five thousand meant fifty thousand." "Not so," answered Plague, "I took but my five thousand; fear and worry killed the others."

INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATH, 1917 (Titles as used by the Nevada State Bureau of Vital Statistics.)

GENERAL DISEASES	
Typhoid fever	15
Relapsing fever	1
Malaria	1
Measles	4
Scarlet fever	5
Diphtheria	5
Croup	1
Influenza	2
Erysipelas	2
Puerperal infection and septicemia	11

Rocky Mountain spotted (tick) fever.....	2
Tuberculosis of the lungs.....	57
Acute miliary tuberculosis.....	2
Tuberculosis meningitis.....	3
Abdominal tuberculosis.....	1
Tuberculosis of other organs.....	1
Syphilis.....	6
Pneumokoniosis (miner's consumption).....	10

CANCER (TOTAL)

Cancer of the buccal cavity.....	1
Cancer of the stomach, liver.....	17
Cancer of the peritoneum, intestines, rectum.....	2
Cancer of the female genital organs.....	2
Cancer of the breast.....	6
Cancer of other or unspecified organs.....	10
Acute articular rheumatism.....	3
Diabetes.....	14
Addison's disease.....	2
Leuchemia.....	1
Anemia, chlorosis.....	8
Alcoholism (acute or chronic).....	19
Autointoxication.....	1

DISEASES OF THE NERVOUS SYSTEM

Simple meningitis.....	4
Cerebrospinal meningitis.....	4
Locomotor ataxia.....	5
Cerebral hemorrhage, apoplexy.....	47
Softening of the brain.....	11
Paralysis without specified cause.....	7
Other forms of mental alienation.....	2
Epilepsy.....	1
Convulsions of infants.....	2
Neuralgia and neuritis.....	2
Other diseases of the nervous system.....	3
Diseases of the ears.....	1
Pericarditis.....	1
Acute endocarditis.....	7
Organic diseases of the heart.....	97
Diseases of the arteries, atheroma, aneurism, etc.....	20
Embolism and thrombosis.....	14
Diseases of the lymphatic system, lymphangitis, etc.....	1
Hemorrhage; other diseases of the circulatory system.....	2

DISEASES OF THE RESPIRATORY SYSTEM

Diseases of the larynx.....	2
Diseases of the thyroid body.....	5
Acute bronchitis.....	7
Chronic bronchitis.....	4
Broncho pneumonia.....	27
Lobar pneumonia.....	53
Pneumonia (undefined).....	40
Pleurisy.....	2
Pulmonary congestion, pulmonary apoplexy.....	6
Asthma.....	4
Other diseases of the respiratory system (tuberculosis excepted).....	1

DISEASES OF THE DIGESTIVE SYSTEM

Diseases of the esophagus.....	1
Ulcer of the stomach.....	5
Other diseases of the stomach (cancer excepted).....	4
Diarrhea and enteritis (under 2 years).....	22
Diarrhea and enteritis (2 years and over).....	10
Appendicitis and typhlitis.....	9
Intestinal obstructions.....	5
Hydatid tumor of the liver.....	1

Hernia	1
Other diseases of the intestines	6
Cirrhosis of the liver	12
Other diseases of the liver	5
Simple peritonitis (nonpuerperal)	17

DISEASES OF THE GENITO-URINARY SYSTEM

Acute nephritis	13
Bright's disease	45
Other diseases of the kidneys and annexa	1
Diseases of the bladder	1
Diseases of the urethra, urinary abscess, etc.	1
Uterine tumor (noncancerous)	1

THE PUERPERAL STATE

Accidents of pregnancy	1
Puerperal hemorrhage	1
Puerperal septicemia	5
Puerperal albuminuria and convulsions	5
Puerperal phlegmasia alba dolens, embolus, sudden death ..	1
Following childbirth (not otherwise specified)	1

DISEASES OF THE SKIN

Gangrene	8
Acute abscess	6

MALFORMATIONS

Other congenital malformations	1
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DISEASES OF EARLY INFANCY

Premature birth	19
Congenital debility, "atrophy," "marasmus," etc.	35
Diseases peculiar to early infancy	1
Stillbirths	37

OLD AGE

Senility	33
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AFFECTIONS PRODUCED BY EXTERNAL CAUSES

Suicide by poison	7
Suicide by hanging or strangulation	2
Suicide by firearms	22
Suicide by piercing or cutting instruments	3
Suicide by jumping from a high place	1
Suicide by crushing	2
Poisoning by food	4
Other acute poisoning	1
Burns (conflagration excepted)	8
Accidental drowning	14
Traumatism by firearms	6
Traumatism by fall	1
Traumatism in mines and quarries	30
Traumatism by machines	2
Railroad accidents and injuries	27
Automobile accidents and injuries	10
Landslide, other crushing	3
Injuries by animals	1
Lightning	1
Electricity (lightning excepted)	4
Homicide by firearms	23
Homicide by cutting or piercing instruments	3
Homicide by other means	1
Fractures (causes not specified)	9

ILL-DEFINED DISEASES

Cause of death not specified, or unknown	15
Ill-defined organic disease	23
Total	1124

CAUSE OF DEATH (International Classification)
From January 1 to December 31, 1918

GENERAL DISEASES	
Typhoid fever	12
Rocky Mountain (tick) fever	3
Measles	1
Whooping cough	4
Diphtheria	3
Influenza (epidemic)	65
Erysipelas	2
Purulent infection and septicemia	11
Rabies	1
Tetanus	2
TUBERCULOSIS (TOTAL)	
Tuberculosis of the lungs	77
Acute miliary tuberculosis	2
Tuberculosis meningitis	6
Abdominal tuberculosis	3
Tuberculosis of other organs	2
Disseminated tuberculosis	1
Rickets	1
Syphilis	2
CANCER (TOTAL)	
Cancer of the stomach and liver	14
Cancer of peritoneum, intestines, rectum	6
Cancer of the breast	2
Cancer of other or unspecified organs	18
Other tumors (except female genital organs)	2
Chronic rheumatism and gout	3
Diabetes	6
Exophthalmic goitre	1
Leuchemia	1
Anemia, chlorosis	7
Alcoholism (acute or chronic)	12
DISEASES OF THE NERVOUS SYSTEM	
Encephalitis	1
Simple meningitis	6
Cerebrospinal meningitis (undefined)	1
Other diseases of the spinal cord	7
Cerebral hemorrhage, apoplexy	48
Softening of the brain	8
Paralysis without specified cause	12
Epilepsy	5
Convulsions of infants	1
Neuralgia and neuritis	1
Other diseases of the nervous system	3
DISEASES OF THE CIRCULATORY SYSTEM	
Pericarditis	1
Acute endocarditis	5
Organic disease of the heart	107
Angina pectoris	2
Disease of arteries, atheroma, aneurism, etc.	16
Embolism and thrombosis	8
Disease of the veins (varices, hemorrhoids, phlebitis, etc.) ..	1
Hemorrhage; other diseases of the circulatory system	6
DISEASES OF THE RESPIRATORY SYSTEM	
Acute bronchitis	2
Broncho pneumonia (uncomplicated)	45
Lobar pneumonia (uncomplicated)	65
Pneumonia (undefined)	101
Pneumonia-Influenza	354
Pleurisy	1

Pneumokoniosis	7
Pulmonary congestion, pulmonary apoplexy	5
Asthma	7
Pulmonary emphysema	1
Other diseases of the respiratory system (tuberculosis excepted)	1

DISEASES OF THE DIGESTIVE SYSTEM

Diseases of the mouth and annexa	2
Diseases of the pharynx	1
Ulcer of the stomach	3
Other diseases of the stomach (cancer excepted)	5
Diarrhea and enteritis (under 2 years)	14
Diarrhea and enteritis (2 years and over)	5
Appendicitis and typhlitis	3
Hernia	2
Intestinal obstructions	11
Other diseases of the intestines	2
Cirrhosis of the liver	10
Other diseases of the liver	3
Simple peritonitis (nonpuerperal)	12

DISEASES OF GENITO-URINARY SYSTEM

Acute nephritis	13
Bright's disease	37
Other diseases of the kidneys and annexa	1
Diseases of the bladder	1
Diseases of the prostate	1

THE PUERPERAL STATE

Accidents of pregnancy	2
------------------------------	---

ACCIDENTS OF PREGNANCY

Puerperal septicemia	5
Puerperal albuminaria and convulsions	1

DISEASES OF THE SKIN

Gangrene	5
Acute abscess	5

MALFORMATIONS

Hydrocephalus	1
---------------------	---

DISEASES OF EARLY INFANCY

Premature birth	11
Congenital debility, atrophy, marasmus, etc.	17
Other diseases peculiar to early infancy	18
Stillbirths	37

OLD AGE

Senility	18
----------------	----

AFFECTIONS PRODUCED BY EXTERNAL CAUSES

Suicide by poison	3
Suicide by hanging or strangulation	1
Suicide by firearms	18
Suicide by cutting or piercing instruments	3
Suicide by jumping from a high place	1
Other suicides	3
Poisoning by food	1
Other acute poisons	5
Burns (conflagrations excepted)	4
Accidental drowning	9
Traumatism by firearms	4
Traumatism by fall	4
Traumatism in mines and quarries	35
Traumatism by machines	6
Railroad accidents and injuries	23
Automobile accidents and injuries	3

Landslide, other crushing	4
Injuries by animals	2
Lightning	3
Electricity (lightning excepted)	1
Homicide by firearms	21
Homicide by cutting or piercing instruments	1
Homicide by other means	2
Fractures (cause not specified)	3

ILL-DEFINED DISEASES

Cause of death ill-defined	18
Cause of death not specified, or unknown	10
Sudden death	1
Total deaths	1518

BIRTHS ACCORDING TO SEX, COLOR, AND NATIVITY OF PARENTS
For the Year Ending December 31, 1917

Counties	Total births	Males	Females	Stillbirths	Twins (pairs)	Illegitimate	Both parents native	Mother native, father foreign	Father native, mother foreign	Both parents foreign	Mother native, father unknown	Mother foreign, father unknown	Neither parent known	White	Yellow	Black	Red	Half-breed
Churchill	67	34	33	2	1		53	4	1	8				67	3			
Clark	60	30	30	2	2		42	2	3	8				57	3			
Douglas	36	20	16				12	7	5	16				26	2			
Elko	147	70	77	4	2	2	100	11	6	27	2			143	2	1	2	
Emeralda	52	28	24	2			33	6	4	9				50				1
Eureka	18	8	10				1			2				18				
Humboldt	120	76	44	5	1	1	64	7	6	43			1	117	1	1	2	
Lander	21	10	11				1		1	3				20				
Lincoln	48	21	27	1	1		38	5	1	3				47	1	1		
Lyon	90	54	36	4			52	16	2	20				89				
Mineral	20	7	13				15	1	2	2				20				
Nye	81	46	35		3	1	53	11	5	19				91				
Ormsby	31	18	13	1		1	19	1	2	9				24	3		2	
Storey	25	12	13	1	1	1	14	3	1	3				24				
Washoe	376	191	185	10	4	8	219	41	13	95	5	1		367	8			1
White Pine	193	97	96	5	1		131	13	11	32				193				
Totals	1395	722	673	37	17	14	872	141	57	301	5	2	1	1395	19	2	6	2

REPORT OF STATE BOARD OF HEALTH

DEATHS ACCORDING TO AGE, SEX, COLOR, NATIVITY, AND SOCIAL CONDITION
For the Year Ending December 31, 1917

Counties	Important ages													Males	Females	White	Colored	Native	Foreign	Unknown	Single	Married	Widowed	Divorced	Unknown
	Under 1 yr.	1 to 5 yrs.	5 to 10 yrs.	10 to 20 yrs.	20 to 30 yrs.	30 to 40 yrs.	40 to 50 yrs.	50 to 60 yrs.	60 to 70 yrs.	70 to 80 yrs.	80 to 90 yrs.	90 to 100 yrs.	100 yrs. and over													Unknown	Stillbirths
Churchill	2	2	2	2	4	6	5	6	7	3	3	---	---	---	1	2	---	---	---	23	16	6	---	---	3
Clark	1	1	1	1	2	2	3	3	5	5	---	---	---	---	4	2	---	---	---	17	8	4	---	---	3
Douglas	10	3	3	5	4	11	14	8	20	9	5	---	---	---	4	4	---	---	---	61	21	14	5	---	1
Elko	7	3	1	6	4	7	5	5	12	3	2	---	---	---	2	2	---	---	---	30	18	7	2	---	6
Emeralda	4	3	---	---	2	---	---	---	---	3	3	---	---	---	---	---	---	---	---	11	7	1	---	---	1
Eureka	3	3	---	---	3	---	---	---	---	4	2	---	---	---	---	---	---	---	---	11	28	4	---	---	1
Humboldt	4	4	---	---	2	---	---	---	11	3	6	---	---	---	5	6	---	---	---	38	7	4	---	---	1
Lander	2	---	---	---	2	---	---	---	12	3	2	---	---	---	2	2	---	---	---	13	7	4	---	---	1
Lincoln	10	1	3	1	4	9	5	17	11	7	5	---	---	---	1	4	---	---	---	33	7	4	---	---	1
Lyon	---	---	---	---	2	3	5	3	3	2	3	---	---	---	---	---	---	---	---	3	9	3	---	---	1
Mineral	---	---	---	---	2	5	5	5	4	2	3	---	---	---	---	---	---	---	---	3	7	4	---	---	1
Nye	3	3	1	2	3	17	7	8	8	3	3	---	---	---	---	---	---	---	---	3	9	3	---	---	1
Ormsby	2	2	1	3	3	3	5	7	7	12	3	---	---	---	---	---	---	---	---	27	18	11	---	---	1
Storey	2	1	1	1	2	2	3	3	3	9	2	---	---	---	1	1	---	---	---	15	12	12	---	---	1
Washoe	28	7	8	12	29	46	42	46	44	33	16	3	---	---	7	10	---	---	---	16	100	52	---	---	25
White Pine	28	8	3	5	20	18	15	13	7	9	4	---	---	---	5	5	---	---	---	85	85	5	---	---	11
Totals	108	40	22	44	96	146	132	139	159	116	59	8	---	---	13	37	---	---	77	538	334	156	29	---	77

CONTAGIOUS, INFECTIOUS AND COMMUNICABLE DISEASES REPORTED BY THE LOCAL HEALTH OFFICERS
For the Year Ending December 31, 1917

Counties	Scarlet fever		Small-pox		Diphtheria and membranous croup		Typhoid fever		Whooping cough		Measles		Mumps		Ordnance		Pneumonia		Tuberculosis		Bronchitis		Acute anterior poliomyelitis		Cerebro-spinal meningitis		Diarrheal diseases of children		Cancer		Puerperal septicæmia		Rocky Mountain spotted fever (tick)	
	C ^a	D ^b	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
Churchill	2	0					4	2			24	0					7	1	2	2							1	1						
Clark																	1	2	1	1														
Douglas	7	1							29	0	66	0	2	0	19	0	13	12	7	5	1	1												
Elko	16	2	6	0			5	2			123	0	1	1	1	0	12	10	6	6														
Esmeralda	2	0															2	2																
Eureka											90	1	1	0	12	0	10	9	4	4	1	1												
Humboldt	10	0	10	0	4	0	3	0	5	0	160	1	1	0	12	0	10	9	4	4	1	1												
Lander	5	0							2	0	39	0	9	0	6	0	4	4	2	2	1	0												
Lincoln	1	0					1	0			19	0	6	0			3	2	2	2	1	0												
Lyon	2	0					16	1			117	0					14	9	2	2	2													
Mineral									2	0	14	0					3	2	2	2														
Nye	9	0					2	1	19	3	1	0	1	0	10	0	12	11	12	11	1	1												
Ormsby	1	0					1	0			91	0			3	0	16	2	5	5														
Storey	4	1					2	1	2	0	3	0			3	0	6	3																
Washoe	43	1	4	0	11	4	21	3	5	0	631	1	1		12	0	41	32	12	11	11	3												
White Pine	4	0	1	0			12	3	2	0	110	0			1	0	14	12	5	5	1	1												
Totals	106	5	21	0	18	5	83	15	47	0	1489	4	18	0	67	0	160	120	62	67	79	11			3	3	68	26	38	37	7	5	12	2

*C—Cases. bD—Deaths.

CONTAGIOUS, INFECTIOUS AND COMMUNICABLE DISEASES REPORTED BY THE LOCAL HEALTH OFFICERS
For the Year Ending December 31, 1918

Counties	Scarlet fever			Small-pox			Diphtheria and membranous croup			Typhoid fever			Whooping cough			Measles			Mumps			Chick-enpox			Epidemic influenza			Pneumonia			Tuber-culosis			Bron-chitis			Cere-bro-spinal menin-gitis			Diar-rheal diseases of chil-dren			Cancer			Puer-beral septi-cemia			Rocky Moun-tain spotted fever (tick)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	C ^a	D ^b		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D		C	D	

^aC—Cases. ^bD—Deaths.

MARRIAGE LICENSES

Issued by the several County Clerks of the State from January 1 to December 31, 1917, inclusive, were as follows:

Churchill County.....	40
Clark County.....	83
Douglas County.....	19
Elko County.....	91
Esmeralda County.....	42
Eureka County.....	9
Humboldt County.....	88
Lander County.....	10
Lincoln County.....	29
Lyon County.....	48
Mineral County.....	15
Nye County.....	61
Ormsby County.....	52
Storey County.....	12
Washoe County.....	376
White Pine County.....	111
Total.....	1076

MARRIAGE LICENSES

Issued by the several County Clerks of the State from January 1 to December 31, 1918, inclusive, were as follows:

Churchill County.....	29
Clark County.....	59
Douglas County.....	10
Elko County.....	77
Esmeralda County.....	34
Eureka County.....	4
Humboldt County.....	64
Lander County.....	12
Lincoln County.....	23
Lyon County.....	31
Mineral County.....	7
Nye County.....	42
Ormsby County.....	37
Storey County.....	1
Washoe County.....	364
White Pine County.....	97
Total.....	891

LOCAL HEALTH OFFICERS OF THE STATE, 1917

Churchill County.....	C. H. Lehnern, M.D., Fallon, Nevada
Clark County.....	Roy W. Martin, M.D., Las Vegas, Nevada
Douglas County.....	C. E. Thompson, M.D., Gardnerville, Nevada
Elko County.....	John E. Worden, M.D., Elko, Nevada
Esmeralda County.....	J. L. McCarthy, M.D., Goldfield, Nevada
Eureka County.....	G. M. Roberts, M.D., Eureka, Nevada
Humboldt County.....	P. J. Mangan, M.D., Winnemucca, Nevada
Lander County.....	G. L. Belanger, M.D., Austin, Nevada
Lincoln County.....	J. West Smith, M.D., Caliente, Nevada
Lyon County.....	Geo. E. Leavitt, M.D., Yerington, Nevada
Mineral County.....	F. C. Pache, M.D., Hawthorne, Nevada
Nye County.....	C. J. Richards, M.D., Tonopah, Nevada
Ormsby County.....	W. J. Circe, M.D., Carson City, Nevada
Storey County.....	Fred W. Hodgins, M.D., Virginia City, Nevada
Washoe County.....	J. A. Ascher, M.D., Sparks, Nevada
White Pine County.....	W. S. Holmquist, M.D., Ely, Nevada

LOCAL HEALTH OFFICERS OF THE STATE, 1918

Churchill County.....	C. H. Lehnars, M.D., Fallon, Nevada
Clark County.....	Roy W. Martin, M.D., Las Vegas, Nevada
Douglas County.....	C. E. Thompson, M.D., Gardnerville, Nevada
Elko County.....	John E. Worden, M.D., Elko, Nevada
Esmeralda County.....	J. L. McCarthy, M.D., Goldfield, Nevada
Eureka County.....	W. H. Brennen, M.D., Eureka, Nevada
Humboldt County.....	E. D. Giroux, M.D., Winnemucca, Nevada
Lander County.....	G. L. Belanger, M.D., Austin, Nevada
Lincoln County.....	W. W. Stockham, M.D., Pioche, Nevada
Lyon County.....	G. E. Leavitt, M.D., Yerington, Nevada
Mineral County.....	J. W. Davis, M.D., Hawthorne, Nevada
Nye County.....	C. J. Richards, M.D., Tonopah, Nevada
Ormsby County.....	S. S. Jarrett, M.D., Carson City, Nevada
Storey County.....	Fred W. Hodgins, M.D., Virginia City, Nevada
Washoe County.....	J. A. Ascher, M.D., Sparks, Nevada
White Pine County.....	F. F. Owens, M.D., Ely, Nevada

LICENSED EMBALMERS OF THE STATE OF NEVADA

J. L. KEYSER, <i>President</i>	Elko, Nevada
T. F. DUNN, <i>Treasurer</i>	Goldfield, Nevada
GEO. E. KITZMEYER, <i>Secretary</i>	Carson City, Nevada

Members

Bates, O. G.	Ely, Nevada
Burke, J. J.	Reno, Nevada
Cavanaugh, Frank	Tonopah, Nevada
Clock, H. E.	Reno, Nevada
Circe, W. J., U. S. A.	Carson City, Nevada
Carlson, Perry	Winnemucca, Nevada
Chick, Frank O.	Reno, Nevada
Dunn, Thos. F.	Goldfield, Nevada
Dunn, Frank T.	Tonopah, Nevada
Deck, J. H.	Pioche, Nevada
Downey, W. J.	Carson City, Nevada
Evans, Wallace N.	Carson City, Nevada
Eddy, Edna T.	Lovelock, Nevada
Faust, C. B.	Las Vegas, Nevada
Gallagher, John.	Lovelock, Nevada
Groesbeck, P. E.	Reno, Nevada
Gulling, John.	Winnemucca, Nevada
Gill, Miss Hazel	Goldfield, Nevada
Glover, W. H.	Ely, Nevada
Hjul, Chas. C. H.	Eureka, Nevada
Keyser, Jos. L.	Elko, Nevada
Kenny, Jos. B.	Virginia City, Nevada
Kearns, H. A.	Austin, Nevada
Kaiser, W. F.	Fallon, Nevada
Keyser, J. H.	Elko, Nevada
Kitzmeyer, Geo. E.	Carson City, Nevada
Moody, J. F.	Quincy, Cal.
Miller, E. G.	Winnemucca, Nevada
Morrison, G. Edwin, U. S. A.	San Antonio, Texas
Noone, John H.	Luning, Nevada
Ocker, Chas. A.	Truckee, Cal.
O'Brien, J. B.	Reno, Nevada
Phipps, Alexander S.	Yerington, Nevada
Patten, T. M.	Winnemucca, Nevada
Rogers, Thos. D.	Manhattan, Nevada
Robbins, J. E.	Elko, Nevada
Ross, Silas E.	Reno, Nevada
Roberts, William I.	Las Vegas, Nevada
Ricketts, S. T.	Ely, Nevada
Smith, Mrs. Lottie	Oakland, Cal.
Seramur, Henry W.	Reno, Nevada

RECOMMENDATIONS

In conclusion, I would respectfully recommend the repeal of the present health law, and the substitution of one more applicable to existing conditions, more in harmony with the spirit of the times, and better calculated to protect the public health.

Should such a suggestion be deemed too radical, I would then advise that drastic amendments to the present law be enacted by the Legislature which will soon convene.

The inadequacy of the existing law to accomplish potential results is quite apparent to any one who reads and digests it. It is narrow and vague, and under its provisions, according to the rulings of the Attorney-General, the State Board of Health is denied necessary jurisdiction in matters that it alone should direct, and its administrative powers are hedged into the narrowest limits.

The present law contains no provision for the employment of a scientist or any field force whatever, and yet through such sources must come the weapons with which we must fight, and hope to conquer, future epidemics, pandemics, etc.

To obtain a knowledge of the origin of epidemics, the adoption of the best means and methods for preventing an outbreak of the same, and the sanest course to pursue when they do occur, are problems which cry aloud for the appointment of an epidemiologist. Such an officer is, to my mind, a necessary adjunct to the Board of Health, and when his special duties did not demand his whole time, he could be of equal value to the Department of Vital Statistics. He could visit the local health officers of the State, instruct them as to their duties, and see that they faithfully and promptly discharge them. The local health officers are poorly paid for the amount of labor required of them, and as a natural consequence many of them neglect the collection of vital statistics, a knowledge of which is absolutely necessary to the department.

For a period of over three months our people have been confronted with an epidemic so terrible in its results that every method possible to stay its further devastation should be inaugurated. From the first days of October until the present, epidemic influenza has swept over the State as a consuming flame, and has claimed by death over six persons out of every thousand of our population. We were not prepared either by laws or the appropriation of money to fight it. Had we been, I believe many lives might have been saved. It may be, however, that the lesson learned through costly sacrifice will be the means of preparing us for future epidemics, such even as physicians and epidemiologists already see in the wake of the one that has had us in its grip for over one hundred days.

At a committee meeting of the American Health Association held in Chicago from the 9th to the 12th of December, 1918, for the purpose of preparing a provisional "working formula" for administrative health officials throughout the country, the Association concluded its labors with the following:

SUGGESTIONS

In view of the probability of recurrence of the disease (influenza) from time to time during the coming year, health departments are advised to be ready in advance with plans for prevention, which plans embody the framework of necessary measures and as much detail as is possible. Laws plainly necessary should be enacted and rules passed now. Emergency funds should be held in reserve

or placed in special appropriations, which appropriations can be made quickly available for influenza prevention work.

The probability that as an after effect of the influenza epidemic there will be an unusually high pneumonia rate for several years should be taken into consideration.

Of measures for the control of the disease, bacteriologic studies as to the nature of the organisms causing the primary infection and to the bacteria associations, new and improved procedures leading to the production and use of effective vaccines and curative sera, and the fresh-air treatment of the infected, appear to offer most promise.

In view of the fact the Government has appropriated and forwarded to the State Treasurer, in accordance with the provisions of the Chamberlain-Kahn Act, the sum of \$800, to cooperate with the State Board of Health of Nevada in its work of venereal-disease control, I would recommend an appropriation by the Legislature of a similar sum for each of the years 1919 and 1920, for the purpose of carrying out the rulings of the Interdepartmental Board.

For the reasons given I urgently recommend the appointment of an epidemiologist and a stenographer. The work in the office of the Secretary has so increased that it is impossible for one person to discharge the duties connected therewith.

As a final suggestion, I would recommend that the Secretary of the Board, the epidemiologist and the stenographer be "full-time" employees.

SIMEON L. LEE, *Secretary.*



STATE OF NEVADA

BIENNIAL REPORT

OF THE

State Rabies Commission

1917-1918



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : JOE FARNSWORTH, SUPERINTENDENT

1919



STATE OF NEVADA

BIENNIAL REPORT

OF THE

State Rabies Commission

1917-1918



CARSON CITY, NEVADA

STATE PRINTING OFFICE

: : : : :

JOE FARNSWORTH, SUPERINTENDENT

1919



BIENNIAL REPORT OF THE STATE RABIES COMMISSION

To His Excellency, HON. EMMET D. BOYLE, Governor of Nevada.

SIR: We submit herewith the first biennial report of the State Rabies Commission created by Chapter 51 of the Statutes of Nevada, 1917, in which is included a statement of the events which led up to the creation of this Commission and the work done along similar lines in the State before that time, with the suggestion that it be published for the information of the people of the State.

HISTORICAL

In view of the fact that this report is the first to be rendered by this Commission or any other body dealing entirely with the question of rabies and the problems incident thereto in Nevada, it seems advisable at this time to review briefly the occurrences which led to the creation of this Commission and also the work done by other organizations in connection with rabies and predatory animal eradication before the creation and organization of same.

So far as is known, the far west was free from rabies until 1909, at which time it made its appearance in Southern California, having been introduced directly from the east. Although recognized at that time, no effective steps were taken to eradicate it and the disease gradually spread, traveling northward through California and being introduced into Oregon, in 1912, by a sheep dog taken across the mountains from Redding, California, to Wallowa County, in that State, where this infected dog, in a fight with a coyote, first introduced the disease among wild animals.

Later the disease worked southeast, involving Idaho, Nevada, and Utah. Traveling by this devious route, the disease did not reach Nevada until April, 1915, although during its passage northward through California it appeared at times very close to the California-Nevada line, but did not cross into and establish itself in the latter State, presumably because at that time the disease was confined to dogs, not involving wild animals, till Oregon was reached as above.

Nevada appears to have finally been invaded by three routes, the first authenticated appearance of rabies being at the northern border of Humboldt County in April, 1915, the disease having crossed the State-line at that point from Oregon. Later invasions took place from Northeastern California into Washoe County and from Idaho into Elko County. Once introduced into the northern part of the State, the disease was spread by means of wild animals and other factors beyond control southward until every county in the State was, to a greater or lesser extent, affected.

The introduction of this disease into Nevada was probably the most serious calamity of its kind which had ever occurred in the State, for in addition to the great losses of live stock, which inevitably followed its general distribution, it constituted a serious menace to the health, safety, and convenience of human beings. The matter was rendered more serious by the fact that this State, in common with the rest of the intermountain country, harbored a large number of predatory animals—coyotes, mountain-lions, wildcats, etc.—which it was impossible to

immediately bring under control and whose numbers could only be materially reduced by long, extensive, and painstaking effort; so that the problem presented here was far different from that in the more densely settled territory where practically the only animals capable of spreading the disease were the domesticated ones—namely, dogs and cats—which could, when occasion demanded, be put promptly under restraint by vigorous enforced legal measures.

The appearance of rabies in Nevada did not find the State entirely unprepared to deal with the situation thereby created, inasmuch as the State Veterinary Control Service was organized and in operation, affording facilities for the diagnosis of the disease in domesticated animals in the field throughout the State and for the laboratory examination of the brains of any animals suspected of having the disease and exposing other animals or human beings to infection thereby. The State Hygienic Laboratory was also well prepared to do its part toward meeting the emergency, arrangements having been made whereby the Pasteur treatment for the prevention of rabies could be given to human beings requiring same at the expense of the State, and this work was instituted immediately upon the arrival of the first patients who presented themselves for this treatment.

The situation, however, relative to the eradication of the predatory animals of the State was not so good, no adequate financial or statutory provisions being at that time in existence for the carrying out of this work. In June, 1915, presentations were made to the Federal Government urging the vital necessity for such eradication measures. In response to this appeal, Mr. E. R. Sans of the Bureau of Biological Survey, U. S. Department of Agriculture, was placed in charge of this work, arriving in Nevada the latter part of September, 1915. Mr. Sans established headquarters at Winnemucca and soon had a rapidly increasing force of hunters scattered over the State conducting a vigorous trapping and poisoning campaign under his direction.

As the Federal Government did not feel warranted in carrying on this work indefinitely unless active cooperation in it was undertaken by the State, a conference was held at Winnemucca in January, 1916, to devise ways and means for affording financial and other cooperation with the Federal Government. This meeting was called and presided over by the Governor, who was actively alive to the gravity of the situation confronting the State. There were present representatives of the State Board of Health, the State Board of Stock Commissioners, the State Board of Sheep Commissioners, the University of Nevada; practically all the counties of the State, and the U. S. Bureaus of Animal Industry and Biological Survey.

As a result of this conference, it was decided that the State Board of Stock Commissioners and the State Board of Sheep Commissioners should each appropriate the sum of \$10,000 out of their funds, and that a State deficiency should be created to the extent of \$10,000, to be repaid out of the general funds by a relief bill in the next Legislature, for carrying on this work in conjunction with the Federal authorities. This arrangement placed the heaviest financial burden directly upon the livestock interests of the State though the general fund contributed to the total, which was a proper proceeding in view of the fact that the problem presenting itself concerned the public health as well as being an economic menace to the livestock industry.

Under the arrangements as outlined above, there were expended for the period from September, 1915, to December 31, 1916, funds as follows:

Federal government	\$55,914.78
State Board of Sheep Commissioners.....	10,000.00
State Board of Stock Commissioners.....	10,000.00
State deficiency	9,511.05
	<hr/>
	\$85,425.83

All this expenditure was applied to actual work in the field for hunters' wages, poison supplies, etc., the salary of the Bureau of Biological Survey Inspector in charge of the work not being included in this total.

During October, November, and December, 1915, there were at work an average of 20 hunters, all of which were carried on the Federal pay-roll.

During 1916 there was an average of 58 hunters per month working on the Federal pay-roll and an average of 54 on the State pay-roll.

During the period from October 1, 1915, to December 31, 1916, there were actually accounted for, by turning in the scalps or hides, the following animals by the Federal and State hunters:

	1915	1916	Total
Badger	14	1,368	1,382
Bobcat	26	1,249	1,275
Bobcat kittens .....	....	10	10
Coyote	648	8,766	9,414
Coyote pups .....	....	100	100
Mountain lions .....	....	3	3
Miscellaneous (fox, mink, muskrat, otter, porcupine, raccoon, skunk, weasel).....	9	689	698
Grand total			<hr/> 12,882

In addition to the animals thus received there were distributed 250,000 poison-baits by which it was estimated there were destroyed between 12,500 and 25,000 predatory animals. While no effort was made to recover the bodies of animals killed by poison, a great reduction in numbers was seen in districts where this plan was pursued and it has been shown by careful observation in the past that when properly laid about one out of each ten to twenty baits is effectual, so the estimate above is considered a safe one.

The work during 1915 and 1916 was confined almost exclusively to Humboldt and Elko Counties, where rabies had first appeared, in an effort to eradicate or at least control the disease.

CREATION OF THE STATE RABIES COMMISSION

For the purpose of continuing the work covered in the foregoing summary and enabling the State of Nevada to enter into a formal agreement with the Bureau of Biological Survey of the U. S. Department of Agriculture and for providing definite financial support for the work carried on under such cooperative agreement, the State Legislature of 1917 passed an act, Chapter 51, Statutes of 1917, approved March 8, 1917, creating the State Rabies Commission.

This act provided for a State Rabies Commission, consisting of the Governor (who is ex officio chairman of the Commission) and four members to be appointed by him, as follows: The Director of the State Veterinary Control Service to act as secretary of the Commission without extra compensation as such, and one member to be appointed from the State Board of Health, the State Board of Stock Commissioners, and the State Board of Sheep Commissioners—all the members so appointed to serve without salary, but to be allowed their actual expenses incurred in carrying on the work of the Commission. The same act carried an appropriation of \$35,000 per annum for the fiscal years 1917 and 1918, this appropriation to be met by an ad valorem tax of two cents on each \$100 of taxable property in the State of Nevada.

ORGANIZATION OF THE COMMISSION

Under the provisions of the above act the Commission was organized as follows:

Gov. Emmet D. Boyle, ex officio Chairman; Hon. H. F. Dangberg, of the State Board of Stock Commissioners; Hon. John G. Taylor, of the State Board of Sheep Commissioners; Dr. Walter H. Hood, of the State Board of Health; Dr. W. B. Mack, Director of the State Veterinary Control Service, ex officio Secretary of the Commission.

The personnel of this Commission remained unchanged until the death of Dr. Mack, January 18, 1918. He was succeeded as a member of and Secretary to the Commission by Dr. Edward Records, who succeeded him as Director of the State Veterinary Control Service and who has since served in this capacity.

Pursuant to the call of the Governor, the first meeting was held in Reno, May 18, 1917, at which time the Commission was formally organized and the following cooperative agreement with the Bureau of Biological Survey, U. S. Department of Agriculture, entered into:

COOPERATIVE AGREEMENT BETWEEN THE BIOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF AGRICULTURE, AND THE NEVADA RABIES COMMISSION RELATIVE TO OPERATIONS FOR THE CONTROL OF RABIES AND NOXIOUS ANIMALS WITHIN THE STATE OF NEVADA.

Procedure:

The Biological Survey, United States Department of Agriculture, shall assume responsibility and have full charge of employing, directing, and supervising all hunters or trappers engaged in the cooperative campaign.

The Nevada Rabies Commission, through the Secretary, shall communicate with the federal predatory animal inspector and cooperate actively with him in reference to locations where hunters are needed and other official matters pertaining to the immediate field supervision of the work.

Reports:

The Nevada Rabies Commission shall report to the Chief of the Biological Survey results of examinations of animals submitted for rabies determination.

Monthly reports upon the work shall be prepared by the predatory animal inspector and shall be submitted in duplicate to the Chief of the Biological Survey and the Secretary of the Nevada Rabies Commission.

Financial Statement:

The aforesaid parties to the cooperation agree to apportion equal sums not in excess of \$35,000 per annum each for the prosecution of the work.

The State's portion of the expenses incident to the campaign shall be paid by state warrants upon presentation of the monthly statement of account duly certified by the predatory animal inspector and approved by the Secretary of the Nevada Rabies Commission.

Furs taken by hunters employed on the state pay-roll shall be sold under the direction of the Nevada Rabies Commission and the net receipt derived from such sale shall be turned in to the Nevada state treasury to the credit of the rabies appropriation fund.

EMMET D. BOYLE,
Governor of Nevada.

W. B. MACK,
Secretary Nevada Rabies Commission,

E. W. NELSON,
Chief, Biological Survey,

B. F. HOUSTON,
Secretary of Agriculture.

May 18, 1917.

Work looking to the eradication of predatory animals and rodents in Nevada under the provisions of the agreement as above was instituted June 1, 1917, and has been actively prosecuted since.

RESULTS ACCOMPLISHED

During 1917 and 1918 there have been destroyed by the State and Federal hunters and definitely accounted for by the turning in of scalps or entire pelts, the following:

	1917	1918	Total
Badger	1,161	963	2,124
Bobcat	1,052	1,017	2,069
Bobcat kittens	78	121	199
Coyote	6,232	5,552	11,784
Coyote pups	338	457	795
Mountain lions	7	8	15
Miscellaneous (fox, mink, muskrat, otter, porcupine, raccoon, weasel, skunk)	856	414	1,270
Grand total			18,256

In addition to the animals above listed known to be destroyed, there have been distributed 200,000 poison-baits suitable for the destruction of predatory animals, and while no definite figures are obtainable as to animals actually destroyed by this method, it is estimated that they number at least 10,000 and the results, judging by lessening of depredations in the poisoned areas, have been most excellent.

The work during this period has been most extensive in Churchill, Elko, Eureka, Humboldt, Lander, Lyon, Nye, and Washoe Counties. All the other counties have had some activity, except Clark. The distribution of work has been governed by the prevalence of predatory animals and the damage done by them in the different districts, but calls for assistance from any special locality have always been met promptly by the assignment of the best available hunter for work there until the condition was relieved.

The effect of this work upon predatory animals has been eminently satisfactory in the lessening of their numbers and the reduction of losses of live stock actually killed directly and that dying of rabies as the result of being bitten by infected wild animals. The danger to human beings has also been markedly lessened by reduction in the chances for exposure to infection from rabid animals, both wild and domesticated. The claim is still occasionally made that the same or better results could be accomplished by the bounty system, but a little careful consideration will show the falsity of this theory. The object

desired, namely that of reduction in numbers of predatory animals to as nearly as possible the point of extinction, will not, in the very nature of things, be accomplished by the private hunter for several reasons.

The private hunter cannot be expected to continue his efforts after the number of animals he can take ceases to yield from fur or bounty a revenue sufficient to afford him ample returns for his time and expenditures, while the most effective method of destruction, namely that of properly employed poison, will not be used by him at all, because he cannot recover any large percentage of the animals destroyed by it, which is essential to his revenue from the sale of furs and bounty collections.

Another factor mitigating against the success of the bounty system is the lack of desire on the part of many hunters to really eliminate the predatory animals which serve as their source of income. Many private trappers are known to make a practice of releasing all females caught in their traps, killing only the males, with the object of perpetuating the stock of animals and at least one instance is known in this State where a "coyote ranch" was conducted, large numbers of the animals being reared inside a tight fence and being fed on worn out horses, etc.

The regularly employed salaried hunter on the other hand, is not influenced by any of these considerations, his income being dependent only on his diligence and faithful work, regardless of the number of animals actually secured. Working under these conditions, he is in a position to pursue the most effective means of destruction available, including poisoning on a large scale, destruction of young in dens, etc., and continue his efforts long after the results, judged by the number of animals taken, cease to be directly proportionate to the effort expended, which leads to the result desired, namely the material reduction in numbers of predatory animals.

While the results so far accomplished are most encouraging, the fact must be squarely faced that to accomplish the ultimate end desired, namely the practical extinction of predatory animals, will require many more years of constant painstaking effort and that as these animals become scarcer and more wary as the result of constant pursuit, the work will become more and more difficult. However, it is believed that the continuance of cooperative effort, adequately financed along substantially the lines now being pursued, will eventually bring about the desired result.

RODENT CONTROL WORK

When State funds became available June 1, 1917, poisoning operations against squirrels and rabbits in Nevada were begun, the campaign being conducted principally in Washoe, Humboldt, Lyon, Eureka, and Elko Counties.

Approximately \$10,000 has been spent from State appropriations for this work. Ten men were employed during the period of greatest infestation and stationed at Afton, Austin, Imlay, Kennedy, Metropolis, to mix poison, give demonstrations and otherwise aid the farmers in fighting the rodents. The poison was furnished by the State as well as the services of the men and the grain was contributed by the farmers, who realized from former experience the complete devastation their grain fields would suffer without expert help to exterminate the pests.

During 1917-1918, 45,100 dead rabbits were actually counted as a

result of the extensive campaign waged and many thousands were destroyed of which the dead bodies were never recovered. The largest number killed in one locality was at Metropolis, where 21,500 were counted. From data gathered the loss for this section alone was placed by the 60 families comprising its inhabitants at about \$50,000.

Elko County seems to be the most seriously affected by rodents as the squirrels were especially numerous and destructive at Metropolis, Wells and Lamoille, and a determined and organized effort was made to control them at these points. Star Valley, near Wells, showed the greatest loss. At the close of the season 250 requests were sent out to the people of these districts for a statement regarding losses and many reported that 50 per cent of their crops were saved, whereas the year before they suffered a total loss. As nearly as could be figured, the benefit derived from poison operations amounted to \$125,000.

Interest in this work is increasing, community clubs have been established, and requests for help the coming season are pouring in with increasing volume. The people who have been given aid and have been materially benefited, know the necessity for cooperative work and really appreciate what has been done. Rabbits and squirrels are so prolific, however, that an unceasing warfare must be waged against them, otherwise the 100,000 acres treated and cleared will be reinfested and the 300 farmers who have cooperated in the campaign will again face serious losses.

EXPENDITURES

For the period of 1917-1918 there was carried on the Federal pay-roll an average of 36 hunters. After the State appropriation became available June 1, 1917, there was carried on the State pay-roll an average of 30 hunters.

There was expended for the biennial period, funds as follows:

Federal funds	\$71,014.91
State funds	52,087.12
Total	\$123,102.03

This includes all expenses for hunters' wages, supplies, etc., and \$10,000 of State funds expended for rodent control work. The salary of the Federal Inspector in Charge is not included in the above.

ACTUAL EXPENSE TO THE STATE

As stated above, there was expended from the State appropriation for the biennial period \$52,087.12. The actual expense to the State was, however, materially less than this for the following reasons: Previous to the ratification of the agreement quoted in this report, all furs taken by the State and Federal hunters became the property of the Federal Government and were sold by it, but the agreement referred to provided that furs taken by hunters on the State pay-roll should become the property of the State. While the returns from the sale of such furs under the State law could not be applied to the work of this Commission directly, but had to be returned to the general fund of the State Treasury, still, by so doing, the actual net expense of the work to the State was materially reduced.

Since the operation of this agreement there have been sold and the proceeds returned to the State Treasury, furs as follows:

302 Badger	\$173.97
319 Bobcat	1,272.70
1,856 Coyote	12,082.66
54 Fox	92.97
5 Mink	18.00
59 Muskrat	31.65
8 Raccoon	10.50
40 Skunk	82.86
2 Weasel	1.50

Total\$13,766.81

A detailed statement of actual expense to the State for the two years 1917-1918, is therefore as follows:

June 1, 1917, State appropriation.....	\$35,000.00	
June 1. to Dec. 31, expenditures.....		\$17,605.81
Dec. 31, unexpended balance		17,394.19
Jan. 1, 1918, State appropriation.....	35,000.00	
Jan. 1, to Dec. 31, 1918, expenditures.....		34,491.31
Dec. 31, 1918, unexpended balance.....		508.69
	<u>\$70,000.00</u>	<u>\$70,000.00</u>

Dec. 31, 1918, total funds expended.....\$52,097.12

Dec. 31, 1918, received from sale of furs.....13,766.81

Actual expenditures\$38,330.31

So that the actual net expense was only a little over one-half the total appropriation available. If we separate the expense of rodent control the figures are as follows:

Total net expenditures from State funds.....	\$38,330.31
Rodent control	10,000.00

Actual net expenses for predatory animal eradication.....\$28,330.31

There are at present on hand, of which no account is made above approximately \$500 worth of State furs, the proceeds from the sale of which will be returned to the State Treasury. From this it will be seen that the actual expense to the State is very low for the results accomplished.

ACKNOWLEDGMENTS

In conclusion, we wish to express our appreciation of the sincere and sustained interest taken by the officials of the U. S. Department of Agriculture in this work and of the service rendered by Mr. E. R. Sans, of the Bureau of Biological Survey, who has been in direct charge of the work in Nevada since September, 1915, and to whose skill and diligence the success of same is largely due.

We also extend thanks to the large number of representative livestock men who have, by their encouragement, moral support and active cooperation done so much to contribute to the successful prosecution of this work.

Respectfully submitted,

STATE RABIES COMMISSION,

EDWARD RECORDS, *Secretary.*



STATE OF NEVADA

REPORT OF SUPERINTENDENT

OF THE

Nevada Hospital for Mental Diseases

1917=1918

JOHN J. SULLIVAN, A.M., M.D., Superintendent



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : JOE FARNSWORTH, SUPERINTENDENT

1919



LIST OF OFFICERS

BOARD OF COMMISSIONERS FOR THE CARE OF THE INDIGENT INSANE

EMMET D. BOYLE (Governor)	Carson City, Nevada
GEO. A. COLE (State Controller)	Carson City, Nevada
ED. MALLEY (State Treasurer)	Carson City, Nevada
E. S. LATOURRETTE, <i>Secretary</i>	Carson City, Nevada

HOSPITAL OFFICERS

JOHN J. SULLIVAN, A.M., M.D., <i>Superintendent</i>	Reno, Nevada
R. J. LONEGAN, <i>Storekeeper and Accountant</i>	Reno, Nevada
MISS MARGARET BURNS, <i>Matron</i>	Reno, Nevada
W. G. CAFFREY, <i>Engineer</i>	Reno, Nevada
J. C. MENEA, <i>Farmer</i>	Reno, Nevada
REV. SAMUEL UNSWORTH, <i>Chaplain</i>	Reno, Nevada
REV. FATHER MEEHAN, <i>Chaplain</i>	Sparks, Nevada

LETTER OF TRANSMITTAL

CARSON CITY, NEVADA, January 2, 1919.

HON. EMMET D. BOYLE, *Governor of Nevada.*

DEAR SIR: I have the honor herewith to transmit the report of the
Hospital for Mental Diseases at Reno, Nevada, for the years 1917 and
1918.

Yours respectfully,

E. S. LATOURRETTE,
Secretary Board of Commissioners for Care of Indigent Insane.

BIENNIAL REPORT

RENO, NEVADA, January 1, 1919.

To the Honorable Board of Commissioners for the Care of the Indigent Insane of Nevada, Carson City, Nevada.

GENTLEMEN: In compliance with law I have the honor to submit the eighteenth biennial report of the Superintendent of the Nevada Hospital for Mental Diseases, for the term ending December 31, 1918.

MOVEMENT OF POPULATION

At the beginning of the term there were 180 males and 64 females; total, 244.

During the term there were admitted 104 males; 42 females; total, 146.

Total number under treatment, 390. Of these there were discharged 70—50 males and 20 females. Average population for the term, 245.83. The term closed with 166 males and 70 females; total, 236.

CONDITION OF THOSE DISCHARGED

Recovered, 58, about 39 per cent of the number admitted, and 14.9 per cent of the number under treatment.

DEATHS

The average of those who died was 54.0 years.

From 20 to 30 years.....	5
From 30 to 40 years.....	12
From 40 to 45 years.....	8
From 45 to 50 years.....	11
From 50 to 55 years.....	3
From 55 to 60 years.....	8
From 60 to 65 years.....	7
From 65 to 70 years.....	4
From 70 to 80 years.....	17
From 80 to 90 years.....	1

Total.....76

The causes of death were: Exhaustion following fracture of the hip, 1; mitral insufficiency, 1; angina pectoris, 1; paresis, 17; apoplexy, 4; senile dementia, 16; cerebral hemorrhage, 6; dementia, 6; tuberculosis, 1; chronic gastro-enteritis, 1; suicide, 1; exhaustion of imbecility, 1; mania, 7; parietic dementia, 4; arteriosclerosis, 1; epithelioma, 1; endocarditis, 2; locomotor ataxia, 1; exophthalmic goitre, 1; pneumonia, 1; chronic bronchitis, 1; chronic nephritis, 1.

AGE OF THOSE ADMITTED

Of the 146 patients admitted during the term, 41 were more than 50 years of age.

FINANCIAL STATEMENT

The last Legislature appropriated for the support of the institution the sum of \$100,000; for construction and equipment, the sum of \$2,500; for the relief of discharged patients, the sum of \$300; for amusement, \$600; for library, \$200; for chaplains, \$720; for pump laundry, tools, etc., \$2,150; a total of \$106,470, of which sum in the special appropriation, \$529.88 reverted to the State Treasury and in the support appropriation, a deficiency of \$14,148.13 exists, due largely to the abnormally high cost of food, clothing, and fuel during the term and to the fact, also, that no money for repairs was appropriated during the term and all necessary repairs were charged to support. This sum should not be properly charged to the maintenance of patients.

During the term we have collected for the care of patients the sum of \$5,702.13, who are here partially at the expense of their relatives, their estates, and the counties from which they are committed. This sum, I believe, is the largest sum that was ever turned over to the State Treasury for the care of patients, during the history of the institution. In addition to the above, the sum of \$165.43 was received from rebate on scrip books. Deducting these amounts, the actual cost of support for the term was \$108,280.57 for 245.83 patients, or an average cost per capita per diem of \$0.6033.

The increased cost of necessary supplies will probably remain high during the next term, and for that reason I consider a general appropriation of \$125,000 for support as an absolute necessity, and that is the amount I recommend, but there are special appropriations just as indispensable as the appropriation for maintenance, and for these I recommend: For repair and construction, \$4,500; for equipment, \$6,000; for amusements, \$600; relief of discharged patients, \$300; for library, \$200; for chaplains, \$720; also a special appropriation of \$21,500, the latter to pay for a new boiler plant, pipe line, and flume, as recommended by our engineer and farmer.

FARM, GARDEN AND DAIRY

A careful study of the statistical tables showing the products of farm, garden, and dairy, will convince any one that it is one of the most important departments in the institution. A record of the products raised and produced shows a net profit of nearly \$17,000 for the term. To better take care of our cattle, it is absolutely necessary to construct an out-building or cowshed that will protect them from the inclemencies of the weather. This particular building is especially recommended upon the advice of the Veterinary Department of the University, who have been called out here at various times to look after our stock. I also ask that a sufficient sum be set aside for the construction of new pens for the hogs and for the purchase of six brood-sows and a boar of the Duroc breed, as the present stock of hogs has depreciated very much, and Professor Wilson of the University suggests that the Duroc breed would probably be just what we need out here.

IMPROVEMENTS

For the past several years my predecessors and myself have asked that the old mansard roof covering the main building be displaced with a new roof, but on careful consideration it appears to me that the con-

tinual repairing of an old building is a waste of money and this continual waste does not do any one any good. The walls of the main building are cracked and weather-beaten, and it is only a matter of time when the entire structure will have to be rebuilt, and I now ask that the Legislature either set aside the sum of \$250,000, or issue bonds for a like amount that would put up a new main building, sanitary, economical to take care of, and up-to-date in every respect, and, at the present time, with the return of our soldiers it would afford a means of giving employment to those who by reason of there being in the Army have lost their old positions.

IRRIGATION FLUME

The water supply for irrigation of our farm is taken from the river at Belle Isle and the flume that carries this water for quite a distance is in very bad shape and is a continual expense in trying to keep it repaired. I recommend that the sum of \$8,000 be set aside for the construction of a new flume, as recommended by our farmer and engineer.

HEALTH

The health of the patients has been, on the whole, very good, with the exception that during the fall of the year 1918 we had our share of the epidemic of influenza, which has been raging in this country for the past several months. There were 62 patients ill with the disease, of which we lost 1. All of the attendants and all of the employees of the institution also had it. I believe that the one death, with the number of cases that we had, gives us a very creditable showing. A peculiar condition manifested itself that, although all of the women employees of the institution had the influenza, but one woman patient, out of all our women patients, had it, and she recovered.

ATTENDANTS

In an institution of this kind it stands to reason that the Superintendent of necessity must look to others continually for the carrying out of his instructions, and this must of necessity fall upon the attendants in charge of the wards. They are now receiving \$60 a month, and I ask that they be granted an increase of their salaries to \$75. Other institutions surrounding us are paying as much, if not more, than we are, and to keep efficient and trained men and women we must meet the salaries that are paid in the adjoining States, and it stands to reason that if attendants are well paid they will be more satisfied and will also portend toward greater efficiency. I also recommend that a laundress be employed to rank as an attendant and have the same salary, who will look after the laundry on necessary days, and also act as a relief in the wards on the days that attendants have off, so that the wards, at all times, will have an attendant on duty.

TRANSPORTATION AND ADMISSION OF PATIENTS

I find from my records that during the past term over \$4,200 was paid out of our support fund for the transportation of patients to the institution. This, I believe, is an injustice to the State and should probably be paid for by the county from which the patients come. During the term there has been the old story of the old, harmless, and in some instances, bed-ridden, patients being committed to the institu-

tion. Many of these should have been kept at their own homes, or at least in the county hospital of their respective counties.

The National Council of Mental Hygiene is endeavoring to establish a uniform mode of commitment and record of patients committed to institutions of this character, and I earnestly recommend that such action be taken, or such changes made in the form of commitment that will conform with the ideas as set forth by this National Council. This will make all of the institutions of the country of like character have the same form of record and would be a very valuable adjunct in the matter of making out statistics.

During the term we received an unusual number of drug addicts, which by right should not have been sent to this institution. When the Harrison narcotic law went into effect, no provision was made for taking care of these unfortunates, and in this State particularly there was no other place to send them or take care of them except here. Some provision should be made for their care separate from the insane.

EMPLOYMENT OF PATIENTS

It is an admitted fact that the greatest curative agent for a majority of patients received in an institution of this character lies in active and congenial employment, and during the term quite a number of patients have been of great assistance to us in work upon the farm, the garden, the roads, the laundry, dining-rooms, and sewing-room. The work that they do is not hard and they are not required to become overly tired from what they do. They enjoy being out and are always ready and willing to do anything that is asked of them. Many of the patients who come here do not require active employment, but, on the other hand, they seem to be benefited more by the discipline imposed upon them, in the keeping of regular hours for eating and for sleeping.

THE NEXT APPROPRIATION

The following budget of expenditures for the years 1919-1920 is recommended:

Support.....	\$125,000.00
Repair and construction.....	4,500.00
Equipment.....	6,000.00
Chaplain.....	720.00
Amusement.....	600.00
Relief of discharged patients.....	300.00
Library.....	200.00
Total.....	\$137,320.00

In addition to this sum I recommend a special appropriation of \$21,500, as follows:

New boiler plant.....	\$12,000.00
Pipe line.....	1,500.00
Construction of new flume.....	8,000.00

This new boiler plant is recommended by our engineer and is to consist of a building separate entirely from our other buildings, with boilers so installed that either wood, coal, or fuel-oil could be used. If we had boilers at present that could burn coal, I believe they would make a very material saving in fuel per month.

The pipe line is to be constructed from our oil tank to the reservoir

for oil on the ground and to do away with the hauling of oil by wagon. Our wagon is old and must soon be displaced by a new one or by a pipe line. I have already spoken of the construction of the flume. I heartily endorse the recommendations of the engineer and trust that this appropriation be granted.

ACKNOWLEDGMENTS

Among the list of patients of whom we wish to make special mention are: John Burke, whose painstaking and efficient work in the laundry is well worthy of commendation; Joseph Dumont, who does all the boot and shoe repairing; Mrs. Matie Allen, whose musical ability has contributed so much to the enjoyment of the patients; John Imalli and Francis Cordova, who are of great assistance in the dairy; Frank Forbes, of great assistance to the engineer, and Al Minton and Robert Delaney, whose work upon the farm is worthy of note.

To the physicians and surgeons of Reno who have always been willing and ready to help me by their advice, especially Dr. Ruediger, of the State Hygienic Laboratory, for the making of repeated blood examinations, and to Drs. W. H. Hood and S. K. Morrison, who so kindly looked after the patients and attendants for me during the epidemic of the "flu."

I also extend thanks to the Reno Stationery Store, conducted by Mr. A. Graham and S. Armanko, who so kindly donated magazines to us.

To the General Film Corporation of San Francisco, who during the past two years have sent us films every week, I wish to extend my thanks and appreciation.

To Rev. Father Meehan and Rev. Samuel Unsworth, our Chaplains, and to the Salvation Army, all of whom have held regular services each month and are always ready and willing to come when called, I extend my thanks.

To the Reno Traction Company and its manager, Mr. R. E. Leeper, who so kindly placed a street-car at our disposal, without charge, for transporting patients to and from the circus both years, I wish to extend my thanks.

To those faithful and efficient employees, without whose efficient aid it would have been impossible to have accomplished anything, I desire to tender my heartfelt thanks and sincere appreciation.

To your honorable board, who have always been ready to assist and advise me in everything pertaining to the institution and to its patients, I am deeply grateful.

Respectfully,

JOHN J. SULLIVAN, A.M., M.D.,

Superintendent.

STATISTICAL TABLES

TABLE I

Movements of population—Admissions, discharges, deaths and escapes

Months	Admissions			Discharges			Deaths			Escapes		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
1917												
January	10	0	10	0	0	0	2	1	3	0	0	0
February	2	0	2	3	0	3	3	1	4	0	0	0
March	2	2	4	1	0	1	5	5	10	0	0	0
April	3	4	7	0	1	1	3	1	4	0	0	0
May	5	4	9	5	0	5	2	0	2	0	0	0
June	7	2	9	0	0	0	1	1	2	0	0	0
July	3	2	5	3	0	3	2	2	4	1	0	1
August	2	1	3	3	1	4	1	1	2	0	0	0
September	5	3	8	0	1	1	2	0	2	1	0	1
October	4	3	7	4	0	4	1	2	3	0	0	0
November	5	3	8	2	3	5	1	0	1	1	0	1
December	4	5	9	1	4	5	2	1	3	0	0	0
Totals	52	28	80	22	11	33	25	10	35	4	0	4
1918												
January	10	2	12	4	2	6	3	0	3	0	0	0
February	4	0	4	3	1	4	5	0	5	0	0	0
March	7	3	10	2	0	2	2	0	2	0	0	0
April	5	0	5	3	1	4	3	0	3	1	0	1
May	1	1	2	5	2	7	5	1	6	0	0	0
June	3	3	6	3	1	4	5	0	5	0	0	0
July	7	0	7	3	0	3	1	0	1	1	0	1
August	1	2	3	2	0	2	1	2	3	2	0	2
September	4	0	4	0	1	1	1	0	1	0	0	0
October	5	1	6	0	1	1	2	0	2	0	0	0
November	4	0	4	2	0	2	6	1	7	0	0	0
December	1	2	3	1	0	1	1	2	3	0	0	0
Totals	52	14	66	28	9	37	35	6	41	4	0	4

TABLE II
Daily average

Months	Men	Women	Total	Months	Men	Women	Total
1917				1918			
January	180.74	66.09	246.83	January	181.48	71.26	252.74
February	182.50	65.78	248.28	February	178.53	70.00	248.53
March	178.68	65.71	244.39	March	182.06	71.23	253.29
April	176.70	67.38	244.03	April	182.56	72.83	255.39
May	177.80	69.87	247.67	May	177.55	71.58	249.13
June	177.96	71.09	249.05	June	168.56	71.23	239.79
July	179.09	71.03	250.12	July	167.51	71.00	238.51
August	171.77	72.29	247.06	August	163.87	71.71	235.58
September	176.87	72.30	249.17	September	164.76	69.40	234.16
October	178.68	74.51	253.19	October	168.16	69.71	237.87
November	177.56	74.10	251.66	November	165.80	69.06	234.86
December	181.03	73.22	254.25	December	166.00	68.45	234.45
Total averages	178.53	70.27	248.80	Total averages	172.23	70.62	242.85

TABLE III
Forms of insanity, as given in commitments, during the term

<i>Forms of Insanity</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Senile dementia	8	3	11
Hallucinations	3	0	3
Paranoia	2	1	3
Epilepsy	2	1	3
Mania, depressive	1	0	1
Drug habit	6	7	13
Imbecility	1	1	2
Melancholia	8	3	11
Acute dementia	1	3	4
Mania, acute	15	5	20
Paresis	3	1	4
Mania, recurrent	1	2	3
Delusional	5	2	7
Dementia	21	6	27
Moral insanity	0	1	1
Dementia, precox	2	1	3
Mania	6	2	8
Unclassified	19	3	22
Totals	104	42	146

TABLE IV
Alleged causes of insanity, taken from commitments, during the term

<i>Alleged Causes</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Cerebral hemorrhage	1	0	1
Fracture of skull	1	0	1
Senility	1	2	3
Exposure	1	0	1
Drugs	6	9	15
Worry	10	1	11
Shock	1	1	2
Heredity	3	3	6
Alcoholic	10	1	11
Masturbation	3	0	3
Menopause	0	3	3
Syphilis	6	1	6
Injury to head	3	2	5
Paranoia	3	1	4
Prenatal	2	1	3
Toxic	3	1	4
Epilepsy	1	0	1
General paresis	1	0	1
Religion	2	1	3
Paralysis	1	1	2
Mental deficiency	3	0	3
Idiocy	1	0	1
Cerebrospinal meningitis	0	1	1
Pregnancy	0	1	1
Temperamental	1	0	1
Unknown	41	12	53
Totals	104	42	146

TABLE V
Showing age of those committed during the term

<i>Age when admitted</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
15 to 20 years of age.....	2	1	3
20 to 25 years of age.....	5	4	6
25 to 30 years of age.....	8	10	18
30 to 35 years of age.....	16	5	21
35 to 40 years of age.....	20	2	22
40 to 45 years of age.....	13	8	21
45 to 50 years of age.....	10	1	11
50 to 60 years of age.....	14	6	20
60 to 70 years of age.....	10	2	12
70 to 80 years of age.....	4	2	6
80 to 90 years of age.....	2	1	3
Totals.....	104	42	146

TABLE VI
Showing duration of disease before admission

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Under 1 month.....	31	5	36
From 1 to 3 months.....	20	6	26
From 3 to 6 months.....	8	10	18
From 6 to 9 months.....	2	0	2
From 9 months to 1 year.....	5	2	7
From 1 to 2 years.....	7	5	12
From 2 to 3 years.....	5	2	7
From 3 to 4 years.....	2	0	2
From 4 to 5 years.....	1	0	1
From 5 to 10 years.....	3	5	8
From 10 to 20 years.....	3	1	4
Unknown.....	17	6	23
Totals.....	104	42	146

TABLE VII
Showing age at which insanity made its first appearance

	<i>Men</i>	<i>Women</i>	<i>Total</i>
From 15 to 20 years of age.....	3	4	7
From 20 to 25 years of age.....	10	2	12
From 25 to 30 years of age.....	6	7	13
From 30 to 35 years of age.....	9	3	12
From 35 to 40 years of age.....	16	3	19
From 40 to 45 years of age.....	10	4	14
From 45 to 50 years of age.....	5	5	10
From 50 to 60 years of age.....	12	1	13
From 60 to 70 years of age.....	7	2	9
From 70 to 80 years of age.....	4	2	6
From 80 to 90 years of age.....	1	1	2
Unknown.....	21	8	29
Totals.....	104	42	146

TABLE VIII
Occupations of those admitted during the term

<i>Occupations</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Laundress	0	1	1
Laborer	25	0	25
Miner	17	0	17
Painter	3	0	3
Ranch-hand	4	0	4
Housewife	0	26	26
Farmer	7	0	7
Cook	4	1	5
Teamster	5	0	5
Sheepherder	7	0	7
Machinist	2	0	2
Stonemason	2	0	2
Blacksmith	1	0	1
Mechanical engineer	3	0	3
Merchant	1	0	1
Railroad conductor	1	0	1
Saloonkeeper	5	0	5
Porter	1	0	1
School-teacher	0	1	1
Barber	2	0	2
Dishwasher	1	0	1
Lawyer	2	0	2
Veterinary	1	0	1
Clerk	1	0	1
Piano-tuner	1	0	1
Chambermaid	0	1	1
Gambler	1	0	1
Waitress	0	2	2
Unknown	7	10	17
Total	104	42	146

TABLE IX
Residence by counties of patients admitted during the term

<i>County</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Elko	10	0	10
Esmeralda	9	4	13
Nye	10	6	16
Ormsby	3	2	5
Humboldt	10	6	16
Churchill	7	1	8
Lander	4	1	5
Washoe	26	14	40
Storey	2	1	3
Lyon	7	1	8
Clark	2	1	3
White Pine	12	3	15
Mineral	2	0	2
Douglas	0	2	2
Totals	104	42	146

TABLE X
Nativity of those admitted during the term

Nativity	Men	Women	Total
United States	59	29	88
Mexico	4	0	4
Ireland	4	2	6
Norway	0	1	1
Italy	4	1	5
Germany	1	1	2
Canada	1	2	3
Sweden	2	0	2
Switzerland	2	0	2
Finland	2	1	3
Spain	6	2	8
Austria	2	0	2
Japan	1	0	1
Scotland	1	0	1
Greece	1	0	1
England	2	1	3
Portugal	4	0	4
Egypt	1	0	1
China	3	0	3
Montenegro	1	0	1
Denmark	1	0	1
France	1	0	1
Manila	1	0	1
Unknown	0	2	2
Totals	104	42	146

TABLE XI
Showing civil condition of those admitted during the term

Civil Condition	Men	Women	Total
Single	54	8	62
Married	33	25	58
Widowed	3	7	10
Divorced	6	0	6
Unknown	8	2	10
	104	42	146

TABLE XII
History and duration of cases of recovery discharged during the term

Duration	Before admission			Hospital residence			Whole period of attack		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Under 1 month	20	5	25	2	1	3	2	1	3
From 1 to 3 months	9	5	14	14	2	16	14	2	16
From 3 to 6 months	1	1	2	2	3	5	2	3	5
From 6 to 12 months	2	3	5	11	7	18	11	7	18
From 1 to 2 years	3	0	3	16	3	19	16	3	19
From 2 to 5 years	2	0	2	3	2	5	3	2	5
From 5 to 20 years	3	4	7	2	2	4	2	2	4
From 20 to 30 years	0	0	0	0	0	0	0	0	0
Unknown	10	2	12	0	0	0	0	0	0
Totals	50	20	70	50	20	70	50	20	70

TABLE XIII

Showing duration of treatment of those discharged during the term

<i>Hospital Residence</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Under 1 month.....	2	0	2
From 1 to 3 months.....	15	1	16
From 3 to 6 months.....	2	3	5
From 6 to 12 months.....	11	7	18
From 1 to 2 years.....	16	3	19
From 2 to 5 years.....	3	2	5
From 5 to 20 years.....	2	2	4
Totals.....	50	20	70

TABLE XIV

Showing duration of cases of those who died during the term

<i>Duration</i>	<i>Before admission</i>			<i>Hospital residence</i>			<i>Entire duration</i>		
	<i>Men</i>	<i>Women</i>	<i>Total</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Less than 1 month.....	18	5	23	3	1	4	2	1	3
From 1 to 3 months.....	11	1	12	4	1	5	2	2	4
From 3 to 6 months.....	4	1	5	8	1	9	5	1	6
From 6 to 9 months.....	4	0	4	6	0	6	7	0	7
From 9 to 12 months.....	2	2	4	6	1	7	3	1	4
From 1 to 2 years.....	6	2	8	9	2	11	12	2	14
From 2 to 3 years.....	2	1	3	4	4	8	7	2	9
From 3 to 5 years.....	1	0	1	4	0	4	3	0	3
From 5 to 10 years.....	2	2	4	4	0	4	5	1	6
From 10 to 20 years.....	0	1	1	6	2	8	8	1	9
From 20 to 30 years.....	1	0	1	3	2	5	2	3	5
From 30 to 50 years.....	0	1	1	3	2	5	4	2	6
Unknown.....	9	0	9	0	0	0	0	0	0
Totals.....	60	16	76	60	16	76	60	16	76

TABLE XV

Showing duration of hospital residence of those who died during the term

<i>Hospital Residence</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Less than 1 month.....	3	1	4
From 1 to 3 months.....	4	1	5
From 3 to 6 months.....	8	1	9
From 6 to 8 months.....	6	0	6
From 9 to 12 months.....	6	1	7
From 1 to 2 years.....	9	2	11
From 2 to 3 years.....	4	4	8
From 3 to 5 years.....	4	0	4
From 5 to 10 years.....	4	0	4
From 10 to 20 years.....	6	2	8
From 20 to 30 years.....	3	2	5
From 30 to 50 years.....	3	2	5
Totals.....	60	16	76

TABLE XVI
Showing cause of death of those who died during the term

<i>Cause of Death</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Exhaustion (following fractured hip)	0	1	1
Mitral insufficiency	1	0	1
Angina pectoris	1	0	1
Paresis	15	2	17
Apoplexy	3	1	4
Senile dementia	11	5	16
Cerebral hemorrhage	3	3	6
Dementia	6	0	6
Tuberculosis	0	1	1
Chronic gastroenteritis	1	0	1
Suicide	1	0	1
Exhaustion (imbecility)	0	1	1
Mania	5	2	7
Parctic dementia	4	0	4
Arteriosclerosis	1	0	1
Epithelioma	1	0	1
Endocarditis	2	0	2
Locomotor ataxia	1	0	1
Exophthalmic goitre	1	0	1
Pneumonia	1	0	1
Chronic bronchitis	1	0	1
Chronic nephritis	1	0	1
Totals	60	16	76

TABLE XVII
Representation by counties at close of term

<i>County</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Churchill	4	3	7
Clark	3	1	4
Douglas	2	1	3
Elko	24	6	30
Esmeralda	9	4	13
Eureka	6	1	7
Humboldt	18	9	27
Lander	4	3	7
Lincoln	2	0	2
Lyon	5	1	6
Mineral	1	1	2
Nye	8	7	15
Ormsby	18	4	22
Storey	3	8	11
Washoe	44	21	65
White Pine	15	0	15
Totals	166	70	236

TABLE XVIII

Giving age at death of those who died during the term

<i>Age at Death</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
From 20 to 30 years.....	3	2	5
From 30 to 40 years.....	12	0	12
From 40 to 45 years.....	5	3	8
From 45 to 50 years.....	9	2	11
From 50 to 55 years.....	3	0	3
From 55 to 60 years.....	8	0	8
From 60 to 65 years.....	6	1	7
From 65 to 70 years.....	4	0	4
From 70 to 80 years.....	9	8	17
From 80 to 90 years.....	1	0	1
Totals	60	16	76

TABLE XIX

Showing cause of insanity, as given in commitments, of those remaining in Hospital at close of the term

<i>Causes of Insanity</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Menopause.....	0	1	1
Drugs.....	4	0	4
Alcohol.....	11	3	14
Typhoid fever.....	1	2	3
Heredity.....	12	10	22
Masturbation.....	13	0	13
Childbirth.....	0	5	5
Epilepsy.....	6	1	7
Sunstroke.....	3	0	3
Brooding over crime.....	1	0	1
Traumatic.....	4	4	8
Senility.....	2	1	3
Syphilis.....	5	3	8
Imbecility.....	0	2	2
Miscarriage.....	0	1	1
Worry.....	11	9	20
Religious impressions.....	4	2	6
Exposure.....	3	0	3
Sickness.....	0	2	2
Lead poisoning.....	1	0	1
Paralysis.....	1	0	1
Loss of memory.....	2	0	2
Shock.....	3	0	3
Congenital.....	1	0	1
Fear of being killed.....	2	0	2
Persecution.....	1	0	1
Mental deficiency.....	1	0	1
Feeble-minded.....	1	2	3
Prenatal.....	0	1	1
Pregnancy.....	0	2	2
Excitement.....	0	1	1
Not given.....	73	18	91
Totals	166	70	236

TABLE XX
Showing average number of patients employed, and how

Months	How employed								Total
	Kitchen	Laundry	Dining-room	Halls	Needlework	Grounds, farm and garden	Men	Women	
1917									
January	5.32	6.00	43.64	58.25	8.54	26.74	81.26	42.90	124.16
February	6.00	4.39	23.92	59.00	8.39	21.32	81.68	41.32	123.00
March	6.00	3.32	43.29	59.00	8.20	21.98	81.74	40.38	122.22
April	6.00	4.50	22.50	57.33	8.30	23.46	84.06	38.20	122.26
May	6.00	3.48	21.74	57.41	7.93	23.77	84.00	36.48	120.48
June	6.00	3.36	22.00	57.93	8.23	24.00	84.00	37.43	121.46
July	6.00	3.67	21.00	58.00	6.00	24.00	84.00	34.74	118.67
August	7.42	4.00	20.74	58.84	7.00	24.00	85.45	36.39	121.84
September	8.10	4.20	22.03	54.13	7.66	24.03	86.54	36.53	123.07
October	8.35	5.06	22.00	57.93	6.83	26.00	88.29	37.38	125.67
November	7.97	4.90	22.13	58.03	8.60	22.70	85.80	37.40	123.20
December	8.16	5.74	22.00	58.00	6.96	21.74	83.83	38.77	122.61
1918									
January	8.77	7.19	21.98	58.00	7.93	21.61	85.06	40.32	125.38
February	7.50	6.39	23.00	57.10	6.25	19.00	81.93	37.32	119.25
March	6.50	5.03	25.77	58.00	6.09	9.41	79.16	37.80	116.96
April	5.30	5.50	21.96	56.60	7.03	15.10	76.80	40.30	117.10
May	4.16	4.58	18.22	50.09	8.50	12.58	72.42	39.06	111.48
June	3.83	6.36	17.26	47.06	9.40	11.96	70.17	41.73	111.90
July	4.68	4.26	20.32	52.50	7.26	15.16	68.90	36.48	105.38
August	4.00	6.35	20.13	49.26	8.23	19.30	71.23	36.61	107.84
September	4.86	7.16	19.36	47.73	7.10	23.40	73.06	37.50	110.56
October	4.76	4.63	22.13	50.93	9.20	19.90	74.10	37.76	111.86
November	5.13	4.20	20.48	49.42	10.55	20.81	72.74	37.19	109.93
December	7.26	7.35	20.42	46.09	8.13	13.09	66.39	40.00	106.39
Totals	6.17	5.04	23.21	54.86	7.84	20.21	79.28	38.33	117.61

TABLE XXI
General statistics and movements of population for 1917 and 1918

	Men	Women	Total
Patients remaining over December 31, 1916	180	64	244
Admitted during the term of 1917 and 1918	104	42	146
Whole number treated during the term	284	106	390
Decrease in population during the term	118	36	154
Patients remaining, December 31, 1918	166	70	236
<i>Decrease in population during the term</i>			
Escaped	8	0	8
Discharged, recovered	43	15	58
Discharged, improved	3	3	6
Discharged, not improved	4	2	6
Died during the term	60	16	76
Total decrease in population during the term	118	36	154
Maximum number within term (average)	182.50	74.51	256.01
Minimum number within term (average)	163.87	65.71	229.58
Daily average of patients during term	175.38	70.45	245.83
Percentage of recoveries to total number admitted			39.04
Percentage of deaths to total number admitted			52.05
Percentage of recoveries to total number treated			14.87
Percentage of deaths to total number treated			19.48
<i>Movements of population from opening of Hospital on July 1, 1882</i>			
Total number of admissions			1,650
Total number of discharges			690
Total number of deaths			689
Percentage of deaths to total number admitted			41.75

TABLE XXII
Movements of population since opening of the Hospital—Gains, losses, daily averages, and daily costs per patient

Term	Gains, admissions			Losses, discharges, etc.			Daily average			Per capita cost per day, maintenance	Superintendents
	Male	Female	Total	Male	Female	Total	Male	Female	Total		
January 1, 1892	117	31	148	27	4	31	114.80	35.18	114.65	74.00	A. Dawson, M.D.
December 31, 1892	20	3	23	50	8	58	114.90	35.18	149.98	67.50	S. Bishop, M.D.
1893 and 1894	62	16	78	50	7	57	121.66	38.04	169.70	62.91	S. Bishop, M.D.
1895 and 1896	48	7	55	47	7	54	124.63	37.10	161.73	63.96	S. Bishop, M.D.
1897 and 1898	49	8	57	41	10	51	124.63	37.10	161.73	63.96	S. Bishop, M.D.
1899 and 1900	50	14	64	43	7	50	134.84	39.24	174.08	67.87	S. Bishop, M.D.
January and February, 1891	2	0	2	2	0	2	138.59	43.00	181.59	61.68	S. Bishop, M.D.
March 1, 1891, to December 31, 1892	54	12	66	51	15	66	141.34	42.72	184.06	49.26	G. H. Thoma, M.D.
1893 and 1894	46	18	64	41	14	55	143.63	43.50	187.03	50.34	G. H. Thoma, M.D.
1895 and 1896	48	17	65	46	16	62	145.61	44.70	193.11	48.17	H. Bergstein, M.D.
1897 and 1898	40	22	62	49	19	68	146.10	45.06	194.16	48.19	H. Bergstein, M.D.
1899 and 1900	34	12	46	38	11	49	134.13	43.43	182.56	52.01	W. H. Patterson, M.D.
1901 and 1902	47	18	65	38	10	48	137.88	51.92	189.80	50.79	W. H. Patterson, M.D.
1903 and 1904	38	18	56	52	17	69	140.27	57.50	197.77	52.72	W. H. Patterson, M.D.
1905 and 1906	70	21	91	52	27	79	136.23	52.58	188.81	53.91	S. C. Gibson, M.D.
1907 and 1908	71	27	98	69	17	86	152.17	55.70	207.87	58.12	S. C. Gibson, M.D.
1909 and 1910	89	28	117	67	27	94	163.37	61.37	224.74	56.07	S. C. Gibson, M.D.
1911 and 1912	84	20	104	81	16	97	177.92	62.07	239.99	52.87	S. C. Gibson, M.D.
1913 and 1914	89	26	115	103	30	133	171.07	62.07	233.14	52.81	J. A. Lewis, M.D.
1915 and 1916	98	26	124	79	21	100	163.87	64.33	228.20	54.11	John J. Sullivan, A. M., M.D.
1917 and 1918	104	42	146	118	36	154	175.38	70.45	245.83	60.83	John J. Sullivan, A. M., M.D.

TABLE XXIII
Showing duration of disease before admission

Period	For the term			At close of term	
	Men	Women	Total	Men	Women
Under 1 month	31	5	36	38	17
From 1 to 3 months	20	6	26	29	10
From 3 to 6 months	8	10	18	9	6
From 6 to 9 months	2	0	2	3	7
From 9 to 12 months	5	2	7	4	2
From 1 to 2 years	7	5	12	9	3
From 2 to 3 years	5	2	7	5	2
From 3 to 4 years	2	0	2	2	2
From 4 to 5 years	1	0	1	6	1
From 5 to 10 years	3	5	8	4	6
From 10 to 20 years	3	1	4	7	4
From 20 to 30 years	0	0	0	3	3
From 30 to 40 years	17	6	23	47	7
Unknown					
Totals	104	42	146	166	70

TABLE XXIV
Showing occupation of those in Hospital at close of the term

Occupation	Men	Women	Total
Saloonkeeper	1	0	1
Porter	1	0	1
Laborer	55	0	55
Housewife	0	40	40
Miner	18	0	18
Rancher	10	0	10
Dancing teacher	0	1	1
Prospector	2	0	2
Sheepherder	5	0	5
Stonemason	3	0	3
Dairyman	1	0	1
Cook	4	0	4
Engineer	3	0	3
Laundress	0	3	3
Tailor	2	0	2
Shoemaker	4	0	4
Seamstress	0	1	1
Painter	2	0	2
Carpenter	1	0	1
Wood sawyer	2	0	2
Blacksmith	4	0	4
Teamster	4	0	4
Musician	1	0	1
Harnessmaker	2	0	2
Farmer	11	0	11
Teacher	0	6	6
Housekeeper	0	1	1
Waitress	0	2	2
Chambermaid	0	1	1
Clerk	1	1	2
Stagedriver	1	0	1
Student	1	0	1
Dishwasher	2	0	2
Packer	1	0	1
Barber	2	0	2
Ironworker	1	0	1
Waiter	2	0	2
Operator	1	0	1
Gambler	1	0	1
Unknown	17	14	31
Totals	166	70	236

TABLE XXV

Showing civil condition of those in Hospital at close of the term

<i>Civil Condition</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Married	22	39	61
Single	129	21	150
Divorced	4	1	5
Widowed	0	9	9
Widowers	3	0	3
Unknown	8	0	8
Totals	166	70	236

TABLE XXVI

Nativity of patients in Hospital at close of the term

<i>Nativity</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
United States	74	55	129
Australia	3	0	3
Canada	6	1	7
China	8	0	8
Poland	1	0	1
English	4	3	7
Spain	9	2	11
Japan	1	0	1
Italy	13	0	13
Portugal	2	0	2
Ireland	12	1	13
Germany	7	2	9
Switzerland	6	1	7
Sweden	3	0	3
Denmark	1	0	1
Mexico	6	2	8
Norway	2	0	2
Russia	1	0	1
Scotland	0	1	1
Turkey	1	0	1
Greece	1	0	1
Unknown	5	2	7
Totals	166	70	236

MATRON'S REPORT

RENO, NEVADA, January 1, 1919.

DR. J. J. SULLIVAN, *Superintendent Nevada Hospital for Mental Diseases.*

DEAR SIR: Please find in the following a report of the work done in the sewing-rooms during the years 1917 and 1918:

<i>Articles</i>	<i>Number</i>	<i>Articles</i>	<i>Number</i>
Aprons, kitchen	10	Napkins, linen	48
Aprons, gingham	71	Pillow cases	361
Aprons, muslin	60	Sheets, double	39
Aprons, cook	24	Sheets, single	339
Aprons, baker	6	Skirts, flannelette	24
Bags, candy	200	Ticks for straw mattresses	11
Bags, coffee	10	Towels, roller	139
Curtains, pair	36	Towels, dish	250
Curtains, short pair	8	Tablecloths, large	8
Chemise	39	Tablecloths, small	3
Drawers, pair	31		
Dresses	75		
Dresses, strong	20	Total	1,812

Respectfully submitted,

MARGARET BURNS, *Matron.*

FINANCIAL STATEMENTS

STATEMENT I

To appropriation, 1917-1918—Support		\$100,000.00
<i>Superintendence—</i>		
Wages, domestic	\$808.67	
Residence expense	3,663.76	
Board visits	304.00	
		\$4,776.43
<i>Supervisor's Office—</i>		
Salaries	\$3,163.20	
Office expense	745.47	
Automobile expense	41.57	
		3,950.21
<i>Heat, Light and Power—</i>		
Wages	\$4,254.00	
Fuel	10,062.49	
Supplies	2,014.59	
Lighting supplies	603.86	
Electric current	1,386.70	
Repairs and equipment	1,050.84	
		19,382.48
<i>General—</i>		
Patient's clothing	\$5,303.21	
Tobacco	1,661.75	
Transporting patients	4,222.51	
Laundry	1,269.08	
Watchman	1,768.75	
Florist	817.34	
Miscellaneous	680.74	
		15,723.38
<i>Hospital—</i>		
Wages, attendants	\$17,359.60	
Drugs	1,633.43	
Bedding	962.64	
Fumigants	1,003.06	
Miscellaneous	481.59	
		21,490.32
<i>Commissary—</i>		
Wages, cook and baker	\$4,716.66	
Provisions	51,463.46	
Utensils	808.74	
Fuel	1,272.88	
		58,961.74
<i>Farm and Garden—</i>		
Wages	\$4,301.44	
Seeds	766.34	
Feed	589.32	
Tools and implements	171.33	
Repairs and equipments	115.65	
Miscellaneous	1,613.14	
		7,557.27
<i>Dairy—</i>		
Wages	\$1,393.00	
Feed	3,684.77	
Repairs and equipment	40.72	
Miscellaneous	309.72	
		5,627.21
Total expenses		\$136,569.04
<i>Less Produce Furnished—</i>		
Farm and garden	\$13,465.08	
Dairy	7,256.86	
Warehouse inventory	1,798.97	
		22,520.91
Total disbursements		\$114,148.13
December 31, 1918—Deficit		\$14,148.13

STATEMENT II

<i>Cash</i>	
Jan. 1, 1917—Balance, patients' deposit fund.....	\$2,144.88
Balance, farm contingent.....	315.09
	\$2,459.97
<i>Receipts</i>	
Deposits by patients, 1917-1918.....	\$1,752.11
From pay patients, 1917-1918.....	4,017.00
Rebate on scrip books.....	165.43
Sale of farm products, 1917-1918.....	794.55
	6,729.09
	\$9,189.06
<i>Disbursements</i>	
Expended for patients during term.....	\$1,144.68
Unclaimed estates of patients, deposited with State Treasurer.....	1,685.13
Contingent farm expenses.....	1,109.64
Remitted to State Treasurer, pay patients.....	4,017.00
Remitted to State Treasurer, scrip-book rebate.....	165.43
	8,121.88
Dec. 31, 1918—Balance in custody of Superintendent.....	\$1,067.18
<i>Distribution</i>	
Dec. 31, 1918—Patients' deposit fund.....	\$1,067.18
Dec. 31, 1918—Farm contingent.....	0.00
	\$1,067.18

STATEMENT III

APPROPRIATION FOR RELIEF OF DISCHARGED PATIENTS

<i>Receipts</i>	
Pro appropriation.....	\$300.00
<i>Disbursements</i>	
By cash paid to patients on discharge.....	\$162.50
By unexpended balance reverting.....	147.50
	\$300.00

STATEMENT IV

APPROPRIATION FOR CHAPLAINS

<i>Receipts</i>	
Pro appropriation.....	\$720.00
<i>Disbursements</i>	
By service of chaplains.....	\$719.40
By unexpended balance reverting.....	.60
	\$720.00

STATEMENT V

AMUSEMENT

Appropriation for amusement, 1917-1918.....	\$600.00
By cash to Mr. Metcalf.....	\$9.81
By cash to J. D. Mariner.....	21.80
By cash to Emporium of Music.....	11.70
By cash to A. B. Manheim.....	75.06
By cash to Conant Bros.....	38.20
By cash to Christmas-tree ornaments and gifts for patients.....	39.32
By cash to music at dances.....	117.00
By cash to expressage on films.....	172.00
	485.79
Balance reverting to State Treasurer.....	\$114.11

STATEMENT VI**CONSTRUCTION AND EQUIPMENT**

Appropriation for construction and equipment, 1917-1918 \$2,500.00

Expenditures

Reno Electrical Works	\$113.84
Commercial Hardware Co.	203.14
Commercial Hardware Co.	308.38
J. R. Bradley Co.	90.00
Reno Electrical Works	21.85
Lane Bros.	5.40
Baker & Hamilton.	6.11
Edw. W. Brown.	5.50
G. A. Metcalf.	5.00
Commercial Hardware Co.	291.17
Verdi Lumber Co.	63.00
Reno Electrical Works	60.07
Nevada Engineering Works.	17.70
Baker & Hamilton.	13.82
Reno Plumbing and Heating Co.	19.30
Donnels & Steinmetz.	58.85
Reno Water, Power and Light Co.	31.06
Reno Electrical Works	27.50
Nevada Engineering Works.	18.35
Donnels & Steinmetz.	154.75
Reno Electrical Works.	70.76
Lewis & Lukey.	308.50
Andrew Martin.	65.00
J. R. Bradley Co.	48.50
Baker & Hamilton.	27.97
Verdi Lumber Co.	18.00
Commercial Hardware Co.	17.50
The White Company, Inc.	65.00
Commercial Hardware Co.	44.49
Commercial Hardware Co.	108.84
Verdi Lumber Co.	48.00
J. R. Bradley Co.	24.40
Remington Machine Co.	53.25
Commercial Hardware Co.	11.79
	<hr/>
	\$2,485.30
Balance reverting to State Treasurer.	\$14.70

STATEMENT VII**SPECIAL APPROPRIATION**

Appropriation, Special, 1917-1918 \$2,150.00

Expenditures

Worthington Pump Machine Co.	\$655.00
Reno Electrical Works	32.29
Commercial Hardware Co.	92.50
Nevada Engineering and Supply Co.	8.75
Commercial Hardware Co.	75.00
Verdi Lumber Co.	18.80
Reno Electrical Works	60.80
D. M. Steward Manufacturing Co.	33.75
Commercial Hardware Co.	31.22
Verdi Lumber Co.	20.80
Reno Electrical Works	17.87
Commercial Hardware Co.	55.95
Reno Electrical Works	17.65
Reno Electrical Works	4.70
Reno Electrical Works	95.00
Commercial Hardware Co.	11.92
Commercial Hardware Co.	5.90
Commercial Hardware Co.	178.10
Commercial Hardware Co.	215.93
Hoskings Manufacturing Co.	50.40
Commercial Hardware Co.	109.50
Commercial Hardware Co.	90.68
Nevada Implement and Supply Co.	48.83
Meese & Gottfried.	15.14
Nevada Machinery and Electric Co.	8.05
Nevada Engineering and Supply Co.	12.90
Commercial Hardware Co.	70.76
	<hr/>
	\$2,038.19
Balance reverting to State Treasurer.	\$111.81

STATEMENT VIII

APPROPRIATION FOR LIBRARY

Receipts

To appropriation		\$200.00
<i>Disbursements</i>		
Wheeler Publishing Co. (Kipling, Stevenson, Bret Harte)	\$48.50	
Carson Appeal	9.75	
Journal	12.00	
Carson Appeal	6.00	
	<u>76.25</u>	
Balance reverting		\$123.75

STATEMENT IX

RECAPITULATION OF APPROPRIATIONS AND EXPENDITURES 1917-1918

	<i>Appropriation</i>	<i>Expended</i>	<i>Balances</i>	<i>Deficit</i>
For support	\$100,000.00	\$114,148.13	-----	\$14,148.13
Construction and equipment	2,500.00	2,485.30	\$14.70	
Relief of discharged patients	800.00	152.50	147.50	
Library	200.00	76.25	123.75	
Amusements	600.00	468.48	131.52	
Chaplains	720.00	719.40	.60	
Special appropriation for pumps, etc.	2,150.00	2,088.19	111.81	
	<u>\$106,470.00</u>	<u>\$120,088.25</u>		<u>529.88</u>
Net deficit				\$13,618.25

STATEMENT X

FARM CONTINGENT FUND

Jan. 1, 1917—To balance on hand		\$315.09
<i>Receipts</i>		
From University of Nevada, sale of hogs		\$110.50
From Wood-Curtis, sale of vegetables		53.80
From Bissinger & Co., sale of veal hide		3.45
From Bissinger & Co., sale of bull hide		15.70
From sale of asbestos paint		36.90
From Bissinger & Co., sale of hide		13.95
From Bissinger & Co., sale of hide		3.15
From Bissinger & Co., sale of veal hide		2.75
From Chas. Van Meter, sale of two calves		20.00
From Andrew Martin, sale of 3,510 pounds of hay		42.85
From Bissinger & Co., sale of hide		10.25
From University of Nevada, sale of hogs		90.63
From Dr. J. J. Sullivan, balance		13.09
From Walter Pickerill, sale of hay		4.50
From Bissinger & Co., sale of hide		17.60
From Wm. Martin, sale of hay		18.45
From Bissinger & Co., sale of veal hide		2.05
From Clarence Menes, sale of horse		90.00
From Tom Murphy, sale of old iron		27.00
From Bissinger & Co., sale of veal hide		3.00
From Neil McGee, sale of vegetables		3.00
From Bissinger & Co., sale of veal hide		2.00
From Nevada Stock Farm, sale of carrots		30.00
From Bissinger & Co., sale of cow and veal hides		11.50
From sale of old iron .....		.60
From Bissinger & Co., sale of two veal hides		3.90
From sale of junk		24.50
From G. B. Colombo, sale of vegetables		139.53
		<u>804.55</u>
Total receipts		\$1,109.64

STATEMENT X—Continued

<i>Disbursements</i>	
By rent of land.....	\$5.00
By pruning trees.....	28.00
By taking bull to depot.....	1.50
By drayage.....	2.50
By freight on bull to Carson City.....	5.60
By vegetables.....	72.10
By painting flagpole and roping.....	10.00
By blackberry and strawberry plants.....	32.50
By Italian Red onion seeds.....	5.00
By work on farm.....	9.75
By expenses to Prison Farm.....	7.20
By shipping cattle to Prison Farm.....	17.70
By work on farm.....	3.25
By Holstein bull.....	100.00
By work on farm.....	46.15
By potatoes (seed).....	150.00
By horseshoeing.....	23.50
By work on grounds.....	39.60
By rent of land.....	5.00
By horseshoes, nails, etc.....	33.60
By seed potatoes.....	184.44
By vegetables.....	300.00
By grain (seed).....	5.00
By blacksmithing.....	22.25
	<hr/> \$1,109.64

STATEMENT XI

FARM AND GARDEN

Jan. 1, 1917—Inventory of personal property as follows:

Machinery.....	\$2,075.44
Vehicles.....	1,000.00
Robes, harness, etc.....	275.00
Poultry.....	19.50
Hay.....	1,280.00
Ensilage.....	400.00
Straw.....	45.00
Dairy, barn, stalls, milking machines, silo, etc.....	3,000.00
Live stock.....	8,132.00
	<hr/> \$16,206.94
Expenditures from general support.....	\$13,178.48
Expenditures from farm contingent.....	1,109.64
	<hr/> 14,289.12
Total expenditures.....	<hr/> \$30,409.06

Products raised as follows (values hereto attached computed at prices current at time of gathering):

<i>Vegetables—</i>	
Potatoes, 140 tons.....	\$3,500.00
Cabbage, 41,000 pounds.....	615.00
Turnips, 67,000 pounds.....	670.00
Onions, 32 tons.....	780.00
Italian Red onions, 1,300 pounds.....	89.00
Hubbard squash, 10,000 pounds.....	200.00
Pumpkins, 55,000 pounds.....	550.00
Rutabagas, 22,500 pounds.....	225.00
Carrots, 108,000 pounds.....	1,030.00
Beets, table, 21,500 pounds.....	215.00
Beets, stock, 32 tons.....	640.00
Parasnips, 32,500 pounds.....	630.00
Cauliflower, 1,050 head.....	105.00
Asparagus, 3,500 pounds.....	105.00
String beans, 1,150 pounds.....	150.00
Dry beans, 1,150 pounds.....	172.50
Celery, 7,400 heads.....	370.00
Corn, 3,125 dozen.....	250.00
Cucumbers, 9,500 pounds.....	95.00
Lettuce, 13,625 heads.....	270.50
Onions, 3,200 bunches.....	128.00
Peppers, green, 3,400 pounds.....	68.00
Peas, green, 2,050 pounds.....	79.50
Radishes, 2,550 bunches.....	51.00
Squash, summer, 2,700 pounds.....	27.00
Tomatoes, 4,800 pounds.....	480.00
Spinach, 2,550 pounds.....	76.30
Horseradish, 30 pounds.....	4.50
Rhubarb, 6,700 pounds.....	134.00
Muskmelons, 140 dozen.....	28.00
Watermelons, 7,500 pounds.....	75.00
Egg plant, 65 dozen.....	9.75
	<hr/> \$11,773.05

STATEMENT XI—Continued

Alfalfa, and oats, 221 tons.....	4,500.00	
Corn, 360 tons.....	7,200.00	
Milk (whole) 35,550 gallons.....	\$7,110.00	
Cream, 1,815 gallons.....	1,185.00	
Skim-milk, 14,825 gallons.....	286.50	
	<u>8,581.50</u>	
Stock Slaughtered—		
2 bulls, 1,740 pounds.....	\$208.80	
4 cows, 1,860 pounds.....	279.00	
9 veal, 966 pounds.....	191.20	
31 hogs, 6,862 pounds.....	1,509.64	
	<u>2,188.64</u>	
Dec. 31, 1918—By inventories of personal property—		
Machinery.....	\$750.00	
Vehicles.....	700.00	
Robes, harness, etc.....	100.00	
Hay.....	520.00	
Ensilage.....	600.00	
Dairy, barn, stalls, milking machine, silo, etc.....	2,500.00	
Live stock.....	8,460.00	
	<u>13,600.00</u>	
Miscellaneous—		
Receipts from sale of farm products, etc.....	804.55	
	<u>\$48,677.74</u>	
Total inventories and expenditures, as above.....	\$30,496.06	
educt board and room of farm and garden employees (no account of same on		
Hospital books) 96 months at \$15 per month.....	1,440.00	
	<u>31,936.06</u>	
Net profit.....	<u>\$16,741.60</u>	

INVENTORY OF THE HOSPITAL FOR MENTAL DISEASES

Giving estimates of the approximate value of the real estate and personal property owned by the State of Nevada, December 31, 1918

Hospital farm consisting of 208 acres, improved and under fence, with water right, 17% interest in Sullivan-Kelley ditch, irrigating ditches, etc., at \$200 per acre.	\$41,600.00
Hospital buildings:	
Main Building	\$125,000.00
Female Ward Building	40,000.00
Barns, outbuildings, corrals, etc.	165,000.00
Superintendent's residence	5,000.00
Killarney Hall, two-story brick	3,000.00
Laundry, one-story brick	2,000.00
Morgue	1,560.00
Machine and carpenter shop, consisting of brick building, lathe, drill-press, emery stand, carpenter tools, 3-hp. motor, shafting, belts and pulleys, and coffee mill	600.00
Blacksmith shop, concrete, with forge, blower, anvil and tools, grind-stones, shafting and belts, etc.	2,200.00
Kitchen and pantries, brick, including range, coffee urns, steam-cooking kettles, etc.	750.00
Male exercising yard, wire enclosure with wooden pavilion	3,700.00
Sewer system	1,500.00
Receiving hospital, stone building, with basement	2,000.00
Power plant, small brick building, wood-stave pipe line, with headgate, 40-KVA generator, 42-hp. turbine wheel, 3-KW exciter, switchboard with fixtures and transformer, 15-hp. motor direct connected to centrifugal pump, 5-inch water main to supply tank, main high-tension wiring to substation	9,000.00
Pumping plant, wooden building, 7½-hp. motor belt connected to triplex pump, belts, pulleys and shafting, pipe line, supply tank and tower, fire system, including 1,000 feet of 5-inch steel pipe, 5 fire plugs, about 500 feet of 2-inch hose and 250 feet of 1-inch hose	3,425.00
Laundry equipment, flatwork ironer, washing machine, wringer, electric irons, heating stove, 2 dry rooms, 7½-hp. motor, shafting, belting and pulleys, 12-hp. boiler, pipes, valves and fittings	5,000.00
Wood-sawing outfit, iron saw-frame, 7½-hp. motor, belting, 3 saws	2,000.00
Ice-plant, Remington ice-machine, condenser, oil-trap, valves and fittings, ammonia receiver, ice-tank coils, refrigeration coils, ice-tank with set ice-making cans, 7½-hp. motor, 1-hp. motor direct connected to centrifugal pump, belts, shafting	420.00
Hydrotherapeutic equipment, bath tubs with marble control table, shower stalls, marble massage table, with control valves, etc., sitz bath, perineal, pack table, electrical cabinet with switchboard and lamps, warming oven, continuous water heater with trap, pipes, valves, fittings and radiators for heating building	2,000.00
Electrical transformers, oil cut-out switch, double-throw slate switchboard, with equipment and wiring to all main buildings, including wire and transformers to barns	3,500.00
Heating plant, horizontal tubular boiler, with fittings, and brick building, 2 Monarch steam heaters, Triumph hot-water heater, hot-water tank, continuous hot-water heater, duplex boiler feed pump, water supply tank, duplex oil pump, 2-hp. motor direct connected to air compressor and oil pump, 2 oil meters, valves, pipe, fittings, radiators in main building, duplicate system and cement floor	3,000.00
Oil supply system, two 13,000-gallon tanks with pipe and valves, boiler	8,020.00
Miscellaneous machinery, etc., engineering department, 250-gallon oil tank, 350-gallon oil tank, 350-gallon water tank, air compressor, two Twentieth Century steam heaters, vertical steam engine, horizontal boiler shell, 12-hp. horizontal engine, Cameron steam pump, 1-inch pipe coils, 2 electric elevators and equipment	2,760.00
Materials and tools on hand in engineering department	2,400.00
Bakery department, oven, mixer, sifter, bread cabinet, 5-hp. motor, shafting, belting and pulleys, furnace, tables, boxes, troughs, tools, etc.	500.00
Farm machinery, tools and equipment, vehicles, etc.	1,000.00
Dairy department, silo, stalls and stanchions, milking machines, churns, separator, butter worker, Babcock testing outfit, equipment	1,550.00
Live stock, dairy cows, bulls and calves, horses and poultry	2,500.00
Feedstuffs, hay, grain, ensilage, etc.	8,460.00
Ward A, furnishings, personal property, as per inventory	1,120.00
Ward B, furnishings, personal property, as per inventory	1,674.00
Ward C, furnishings, personal property, as per inventory	1,838.50
Ward D, furnishings, personal property, as per inventory	2,269.35
Ward E, furnishings, personal property, as per inventory	1,081.20
Ward F, furnishings, personal property, as per inventory	1,782.34
Ward G, furnishings, personal property, as per inventory	1,967.63
Matron's quarters, furnishings, etc.	1,433.00
Female night-watch quarters	293.90
Supervisor's office, furnishings, etc.	120.40
Reception room, furniture, etc.	250.00
Main entrance hall, furniture, etc.	65.00
Club-room, furniture, books, etc.	100.00
Recreation Hall, furniture, moving-picture machine, piano	1,150.00
Superintendent's office, furniture, etc.	400.00
Supervisor's quarters, furnishings	250.00
Officers' and employees' dining-room equipment	460.00
Matron's sewing-room	389.60
Operating-room, equipment and surgical instruments	226.00
Dispensary, drugs, and supplies	500.00
Superintendent's residence, furnishings	60.00
Total	1,142.20

\$302,968.2

STATE OF NEVADA

BIENNIAL REPORT

OF THE

STATE BOARD OF AGRICULTURE

1917=1918



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT

1919

STATE BOARD OF AGRICULTURE

DIRECTORS

A. Dromiack	Reno	C. W. Renfro	Fallon
I. H. Kent	Fallon	D. E. Williams	Fallon
Reay Mackay	Fallon	Frank McDermott	Fallon
R. B. Govan	Tonopah	F. J. Button	Winnemucca
E. L. Bingham	Fallon	Joe Jarvis	Fallon
R. L. Douglass	Fallon	H. J. Amigo	Reno
W. A. Keddie	Fallon	Fred Dangberg	Minden
Henry Stevens	Sparks	George Wingfield	Reno

OFFICERS

W. A. Keddie	President	C. L. Noble	Secretary
George Wingfield	Vice-President	Joe Jarvis	Treasurer
W. E. Bowler	Superintendent of Live Stock		

EXECUTIVE BOARD

W. A. Keddie,	Joe Jarvis,	F. J. McDermott,
R. L. Douglass,	Reay Mackay,	

LIFE MEMBERS OF STATE AGRICULTURAL SOCIETY

Adams, J. W.	Carson City	Mulcahy, P. H.	Sparks
Allen, Lem*	Reno	Nelson, Thomas	Stone House
Abrahams, L.	San Francisco	Noyes, W. H.	Reno
Bell, Frank	Reno	Parry, R. W.	Reno
Bevier, L.	San Francisco	Phillips, W. D.	Reno
Bell, W. J.	Winnemucca	Rickey, T. B.	Berkeley, Cal.
Curtis, M. J.	Reno	Russell, George	Elko
Drappo, E. L.	Reno	Regan, Frank	Reno
Dromiack, Alex.	Reno	Sanford, J. M.*	Fallon
Dangberg, H. F.	Minden	Shane, A. D.	Reno
Evaus, Mrs. Newton	Reno	Smith, Mrs. O. J.	New York
Fulton, R. L.	Reno	Sadler, Chas. A.	*San Francisco
Flanigan, P. L.	Reno	Stoddard, Chas. A.	Reno
Gosse, H. J.	Reno	Sparks, Benton	Reno
Gordon, Gurney	Reno	Slater, U. M.	Reno
Harris, T. T.	Elko	Summerfield, Sardis	Reno
Hunter, Thos.	Elko	Talbot, James	Reno
Lewis, R. W.	Austin	Williams, Frank	Goodsprings
Lemery, C.	Pomona, Cal.	Watt, George	Austin
Luke, W. J.	Reno	Wildes, F. L.	Carson City
Lungebaugh, Sam.	Franktown	Wilcox, A. D.	Battle Mountain
Mayberry, Jas.	Reno	Wheeler, D. C.*	Reno
Martin, Mrs. W. O. H.	Reno	Wheeler, S. H.	Reno
McCone, A. J.	San Francisco	W. A. Keddie	Fallon
Mapes, G. W.	Reno	R. L. Douglass	Fallon
Marzen, Joseph	Sacramento	George Wingfield	Reno

*Deceased.

PRESIDENT'S REPORT

OFFICE OF THE PRESIDENT,
FALLON, NEVADA, December 31, 1918.

HON. EMMET D. BOYLE, *Governor of the State of Nevada.*

SIR: Complying with the requirements of the statutes governing the Nevada State Agricultural Society, we have the honor and beg to herewith present to you an accounting and report of the proceedings had by the Society during the biennial period 1917 and 1918, together with the financial report of the Secretary showing all the receipts and disbursements for this period.

At a meeting of the State Board of Agriculture held at Reno, June 1917, nine members being present, Mr. George Wingfield presiding, in compliance with your wishes, in order to adjust the term of each of sixteen members, it was decided to draw lots to determine in which member would serve, which resulted as follows: Mr. A. Dromiack, H. I. Kent, Reay Mackay, and R. B. Govan, one-year terms; E. L. Whigham, R. L. Douglass, W. A. Keddie, and Henry Stevens, two-year terms; C. W. Renfro, D. E. Williams, Frank McDermott, and F. J. Butcher, three-year terms, and Messrs. Joe Jarvis, H. J. Amigo, Fred Dangberg, and George Wingfield, four-year terms.

The chairman then announced that the next order of business would be the election of officers.

Mr. George Wingfield was placed in nomination for President, but declined the nomination on the ground that as the State Fair, being held at Fallon, required the presence of a presiding officer, the society could be better served by a resident of Fallon. The name of Mr. W. A. Keddie was then presented and duly seconded. There being no other nominations Mr. Keddie was declared unanimously elected to serve for the coming year or until his successor was elected and qualified.

Mr. George Wingfield was placed in nomination for Vice-President, which was duly seconded. There being no other nomination Mr. Wingfield's election was made unanimous.

Mr. C. L. Noble of Fallon was placed in nomination and unanimously elected Secretary-Treasurer, and his bond fixed at one thousand dollars. On motion duly seconded and carried it was ordered that the President be allowed to make the necessary appointments for the various committees.

On motion duly seconded and carried it was ordered that the Reno race-track be leased to the Reno Business Men's Association for the purpose of conducting race-meets, and that the rental therefor would be twenty-five hundred dollars for a twenty-five day race-meet, or one hundred dollars per day, the money from such rental to be applied on the debt held by the Reno bank, amounting to about \$8,000.

The sum of four thousand dollars having been appropriated by the Legislature for the purpose of constructing an exhibit building on the State Fair Grounds at Fallon, we beg to report that after careful estimates and calculation the best we could do with that amount of money would be to complete the exterior of such a building so that it would

serve the purpose until such time as the necessary funds would be available for its completion. This building, with a floor space of 60x110 feet and a large gallery, when completed will lack nothing of the artist design and architecture of buildings of its kind.

This board in presenting the Fairs of 1917 and 1918 did so with full realization of the fact that the conditions in the State and Nation were abnormal, that they would be laboring under obstacles brought about by war conditions, but with an earnest desire to meet the needs of the hour. The President of the United States having called for increased food production and for conservation, increased the duties of the society. The demands for more and better soil and livestock production were never more urgent. The fairs of our country, having been inaugurated and maintained for years to serve this very end, the need was intensified many-fold by existing conditions.

Keeping in touch with the patriotic demands of the day, every problem in the increased food and livestock production and conservation was given attention at the fairs; every producer was encouraged to show his best output that others might profit by his experience and the best interest of the State and Nation be served, there being an urgent demand for everything that could possibly be produced in the State, and a market to absorb it all. The problem was to meet the demand and at the same time maintain conditions of stability throughout the State.

Conforming with the newly outlined policy of closer cooperation between the various State Fairs and the Government in the work of helping to bring the war to a successful conclusion by increased food production and conservation with the help of the Extension Department of the University of Nevada, the Nevada State Fairs have become food-training camps, and had it not been for transportation conditions, there is no doubt but that an enormous exhibit of war trophies would have been displayed at Fallon as was done at nearly all of the eastern state fairs.

One of the most important phases of the fair work, and which appealed to all, is the necessity of maintaining public spirit. It has been well said that a happy and contented nation can solve any problem of war or peace and the duty of the hour was to work for that condition, believing that a reasonable degree of relaxation with proper recreation and amusement would go far toward diverting the thoughts of our people from the war and its terrors, convincing them of the commercial stability and permanent prosperity of our country, the experience of other countries proving that the normal recreation and activities of the country are the best remedies for public depression. Reports show that during the past three years the great exhibitions of several of our Allies, especially those at Lyons, France, were maintained as a safeguard against national pessimism.

The Executive Committee, working in conjunction with our State University, recognized the great need of educational facilities in our public schools for shaping our students for farm life, and to this end offered liberal premiums for the successful members of the boys and girls clubs, which developed a spirited contest among the boys and girls for supremacy. The State Fair is looked upon by the members of these clubs as their annual goal, and therefore this part of the exhibits, together with their demonstrations conducted at the fair, created more interest than any other department. The State of Nevada, following the example of many other States, should continue to lend all the encouragement

possible to this branch of education, it having been well stated that there can be no great permanent improvement in our agriculturists until they shall have become more thoroughly educated in the business of farming, and this must be done, if done effectively, or at least begun, while the farmer is yet a child.

In the matter of entertainment at the fairs we wish to state that this feature of the fairs was turned over to special committees appointed for that purpose, which financed the racing by public subscriptions and gate receipts, a report of which will, no doubt, be made through the State Racing Commission, this matter being kept entirely separate from the agricultural part of the fairs.

In conclusion, we wish to state that, in our opinion, it costs the State less to maintain and operate the State Fair of this State, which, at the same time, does more practical good in the development of our State's resources, than any other branch of the State Government.

The conditions in this State require that more attention must be given to agriculture in its various branches. Fortunate in soil and climatic conditions for the production of many kinds of soil products we must, in a measure, rely on them for returns. Sufficient flood-waters are going to waste in the several rivers of this State to irrigate and make productive millions of acres of our unoccupied lands. All that is needed is the capital and personal touch. What else have we with more promise to furnish the necessary funds to supply our commercial wants?

The United States Reclamation Service having expended nearly nine million dollars to develop the agricultural possibilities of this part of our State, we feel that our State can afford to do no less than to continue the State Fair in the metropolis of this great reclamation project, which will, by the stability of its organization and the permanency of its annual exhibitions, establish itself in a commercial sense with the people of Nevada. They will look to it for the opportunity to present their best products for exhibition and educational purposes, which is in every way deserving of more public support than it has received. The more permanent this organization the more effective will be the result, and we earnestly solicit your efforts and support in retaining and enlarging the State Fair at Fallon.

The accompanying detailed statement shows the disbursement of the four thousand dollars appropriated for the construction of the exhibit building on the State Fair Grounds at Fallon, and the receipts and disbursements of the 1917 and 1918 State Fairs at Fallon.

Respectfully submitted,

W. A. KEDDIE, *President.*

SECRETARY'S REPORT

To the State Board of Agriculture, Fallon, Nevada.

GENTLEMEN: The State having appropriated the sum of four thousand dollars in 1917 for the purpose of constructing necessary exhibit buildings on the Nevada State Fair grounds at Fallon, I beg to submit the following statement of the disbursements of this appropriation:

Verdi Lumber Co., lumber	\$382.12
Joe Jarvis, cash paid laborers	51.00
Robinson & Hammond, contractors	1,800.00
Flanigan Warehouse Co., cement, etc.	252.00
The I. H. Kent Co., hardware and building material	761.63
Erkid's Electric Shop, electric work and supplies	49.25
Verdi Lumber Co., additional lumber	104.00
	\$4,000.00

STATE FAIRS AT FALLON

To the State Board of Agriculture, Fallon, Nevada.

GENTLEMEN: I beg to submit the following report showing the financial transactions of my office during the years 1917 and 1918, covering the State Fairs at Fallon for these years, and the receipts and disbursements of the rentals from the Reno grounds of this association:

Statement for 1917

<i>Receipts</i>	
Cash on hand	\$10.16
Borrowed from Churchill County Bank	200.00
Received from Pavilion ticket sales	339.05
Received from rental of Reno race-track	2,500.00
Received from state appropriation	5,110.50
Total receipts, including cash on hand	\$8,159.71

<i>Disbursements</i>	
Bill posters	\$80.56
Printing and advertising	313.01
Insurance Fallon property	285.00
Secretary's bond and filing	12.50
Lumber and other supplies	288.43
Tank for cesspool	15.00
Telephone	5.00
Plumbing and pipe fixtures	126.28
Labor	1,448.00
Telegrams	32.66
Postage	16.88
Electric supplies	27.09
Judges' expenses	55.15
Silver cups and engraving	46.95
Grain for poultry	11.30
Lights and lighting	73.93
Hay	287.52
Straw	20.00
Office rental	15.00
Paid Reno National Bank to apply on notes	2,500.00
Paid Churchill County Bank borrowed money and interest	206.00
Premiums—Horses	95.50
Cattle	396.00
Sheep	63.00
Swine	224.00
Dairy products	40.00
Field crops	70.00
Fruits	173.00
Flowers	9.00
Garden truck	139.25
Needlework and fancy work	168.50
Canning	36.00
Baking	40.00
Boys and Girls Club work	229.00
Other school work	16.00
Poultry	108.40
Indian exhibits	216.00
Balance on hand	\$7,891.89
Total disbursements	\$8,159.71

Statement for 1918

<i>Receipts</i>	
Cash on hand from 1917 operation.....	\$267.82
Reno Business Men's Association, rent of Reno track.....	1,900.00
Borrowed from Churchill County Bank.....	300.00
Exhibitors' ticket sales.....	196.00
Pavilion ticket sales.....	314.00
Resale of hay.....	147.65
From state appropriation.....	6,000.00
Total receipts.....	\$9,125.47
<i>Disbursements</i>	
Insurance on Reno property for 1917.....	\$380.00
Advertising for 1917.....	30.00
Silver cup and engraving, 1917.....	17.15
Hardware and express.....	9.14
Sign posters.....	297.75
Hay.....	550.00
Lime and spray pump.....	14.80
Disinfectants.....	5.40
Plumbing and fixtures.....	95.65
Water and connections.....	20.90
Carpenter work.....	114.00
Tickets and entry supplies.....	60.76
Windows.....	188.00
Labor.....	1,477.46
jitney service.....	21.75
Postage and express.....	15.31
Judges' expenses.....	51.18
Contract price on band.....	350.00
Meals for band at Fallon.....	104.40
Rooms for band.....	54.00
Telephone.....	5.00
Fish ladder for Reno grounds.....	18.40
Straw.....	24.30
Lumber and supplies.....	382.47
Printing and supplies.....	80.00
Electric work and supplies.....	46.45
Telegrams, W. U. T. Co.....	1.93
Express.....	12.93
Insurance Fallon property.....	66.00
Renewal Secretary's bond.....	7.50
Silver cups and engraving.....	128.80
Office rental.....	10.00
Reno National Bank to apply on note.....	1,900.00
Churchill County Bank, borrowed money and interest.....	307.50
Premiums—Horses.....	100.00
Cattle.....	226.00
Sheep.....	108.00
Swine.....	92.50
Dairy products.....	3.00
Field crops.....	62.00
Fruits.....	162.00
Flowers.....	12.00
Garden truck.....	118.25
Bees and honey.....	24.00
Needlework and fancy work.....	163.75
Canning.....	31.00
Baking.....	8.00
Indian exhibits.....	249.00
Boys and Girls Club work.....	356.80
Poultry.....	118.75
Total disbursements.....	\$8,623.98
Cash now in treasury.....	501.49
Total disbursements.....	\$9,125.47

Respectfully submitted,

C. L. NOBLE, *Secretary.*



STATE OF NEVADA

BIENNIAL REPORT

OF THE

State Fish and Game
Warden

1917=1918

C. W. GROVER
State Fish and Game Warden



CARSON CITY, NEVADA

STATE PRINTING OFFICE

: : : : : JOE FARNSWORTH, SUPERINTENDENT
1919



BIENNIAL REPORT OF THE STATE FISH AND GAME WARDEN

HON. EMMET D. BOYLE, *Governor of the State of Nevada.*

SIR: I have the honor to submit my first biennial report for the years 1917-1918.

The office of State Fish and Game Warden was created by an Act of the Legislature, approved March 27, 1917 (Stats. 1917, p. 472). Immediately thereafter I was appointed to the position and qualified as such State Fish and Game Warden, and upon assuming the duties thereof (April 2, 1917) I found that no appropriation had been made for the equipment of the office, therefore had to depend upon the generosity of other departments, which kindly donated for my use certain articles of furniture, such as chairs, desk, typewriter, etc., so that I was able to conduct the affairs of the office in a fairly satisfactory manner. I am particularly indebted to your Excellency for your untiring efforts in securing the necessary equipment.

Having installed the furniture and other necessary equipment, I immediately set about familiarizing myself with the duties required. I found that a greater part of my time would be required in superintending the field work, in getting personal knowledge of conditions throughout the State and otherwise fitting myself that I might handle the work satisfactorily.

On April 6, 1917, in company with the Deputy Warden of Washoe County, I visited the Government Reclamation Dam near the town of Derby, found the fish-ladder at this point to be of the proper length, width, and fall for the free passage of fish during the spawning season, but, owing to bad weather conditions and the lateness of spring, we found that there was not the usual run of fish. We then continued our trip to the Government Reclamation Dam located within the boundaries of the Pyramid Lake Indian Reservation for the purpose of inspecting the dam at that point.

We are of the opinion that the fish-ladder at this dam is poorly constructed, the location being bad, being also too short and narrow and not set low enough in the dam at the intake, the result being that during low-water state there is not water enough enters the ladder to feed it properly. I believe, however, that, by proper presentation of these facts to the Government, additions and improvements may be made. We found the same conditions prevailing here as at the Derby Dam, bad weather conditions and lateness of spring retarding the usual run of fish up the river. We called upon the Indian Agent at his headquarters here, who assured us of his hearty cooperation in preventing all persons, including Indians, from taking fish in any manner contrary to law.

On April 18, 1917, I again visited the Derby and Indian Dams and found conditions the same as on my former visit—no fish running. I am of the opinion that the opening of the season (April 1) in this district is much too early—about thirty days I should say.

During the latter part of April, 1917, I visited Verdi, the State Fish

Hatchery and many other places on the Truckee River above and below Reno, inspecting dams and ditches, meeting with the people, getting personal knowledge of conditions that I might be in a position to handle the affairs of this department intelligently.

May 3, 1917, I made an official trip to Minden, Gardnerville, Genoa and many other points in Douglas County, inspecting dams and ditches and conditions generally, meeting with the people with a view of becoming acquainted, everywhere being treated with great courtesy and assured of hearty cooperation. On the East Fork of the Carson River I found that a dam was being built for the storage of water, by the Douglas Milling and Power Company, in which there was no fish-ladder, but was assured by the party in charge that a ladder would be installed upon completion of the work.

May 12, 1917, a report reached me that the Indians on the Pyramid Reservation were violating the law relating to the snagging of fish. I immediately visited that section, but failed to find any evidence of such violation. I reported the matter to the Indian Agent, who assured me that he would do all in his power to prevent further violations.

From May 12 to May 25, 1917, I made official trips to many parts of Washoe, Ormsby, Storey, and Douglas Counties, everywhere being accorded kindly reception by the people and county officials with assurances of cooperation.

During the latter part of May and the first part of June, 1917, I visited officially Humboldt, Elko, and White Pine Counties, finding conditions ably handled by deputies and again being assured of assistance and cooperation by the good people of those counties. I found in all of the counties thus far visited that a great many of the streams need restocking with young fish, which the State Fish and Game Commission assure me will be done.

From June 10 to June 15, 1917, in company with two members of the State Fish and Game Commission, I visited many different parts of the State, among others the United States Reclamation Dams at Derby, Pyramid, and Lahontan. We also called at Wadsworth, Hazen, Fernley, Fallon, and Reno, making a thorough inspection of all dams, ditches, and conditions generally. The Fish and Game Commission is of the same opinion as myself, relative to the fish-ladder at the Indian Dam, in that it is located on the wrong side of the river and is poorly constructed, the result being that, so long as present conditions prevail at this point, but few fish will ever be able to reach the spawning-ground in the headwaters of the Truckee River.

From June 16 to July 2, 1917, I made an extended trip to the southern and eastern portion of the State, visiting officially Churchill, Mineral, Esmeralda, Nye, Clark, Elko, Lincoln, and Humboldt Counties, making many side-trips from the line of railroads to the smaller towns and settlements, getting personal knowledge of conditions generally, taking up the matter of screens and ladders with the people, who promised that the law relating to screens and ladders would be complied with, and receiving kindly treatment and assurance of cooperation from the people.

July 8 to 18, 1917, in company with the Deputy Warden of Washoe County, I made an extended trip to the extreme northern portions of Washoe County, visiting many places where game birds and animals

are plentiful, placing men at different points for the protection of game on the opening of the shooting season for sagehens (July 15). On the evening of July 15 we returned to Buffalo Meadows and learned that a party of hunters had left the shooting grounds early that morning with a greater number of birds than allowed by law. Early in the morning of July 16 we started for Reno, arriving at 2 o'clock in the afternoon, driving directly to a café on Second Street, examined the premises, and found eighty-five birds in the possession of the proprietor. We immediately took possession of the birds, swore to a complaint charging the party with having a greater number of game birds in his possession than allowed by law, had him brought before a Justice of the Peace, where he acknowledged his guilt and was fined \$50, which he paid. The birds were then donated to charity.

July 26 to July 29 I made an official visit to Lake Tahoe, inspecting the conditions on the Nevada waters, interviewing the fishermen along the shore-line and upon the waters, found that all were provided with licenses, except a small party from California, who were just landing and from whom I collected the necessary fee before allowing the taking of fish in Nevada waters.

August 6, 1917, I met with the County Commissioners of Washoe County, taking up the matter of regulating the open and closed season for certain game birds and other matters relating to the protection and preservation of fish and game. From there I continued my trip to Churchill County, meeting with the Commissioners, taking up with them the same matters as with the Washoe County board.

August 8, 1917, I made an official visit to Lyon County and upon inquiry and investigation found conditions relating to fish and game very satisfactory, being received courteously by the good people and being assured of hearty cooperation and that screens would be installed where necessary in compliance with law.

August 13, 1917, made an official trip to the central and eastern portions of the State, traveling over the greater part of Elko County, visiting Elko, Deeth, Halleck, Fort Halleck, Lamoille, Wells, Ruby Valley, Metropolis, Starr Valley, Clover Valley, Secret Valley, Carlin, Jarbidge, North Fork, South Fork, and many other places; taking up with the farmers the matter of screens and meeting with good results in all cases. On this trip I arrested five different men for the violation of the fish and game laws and secured a conviction in four cases.

August 27, 1917, paid an official visit to Lander County, taking up the matter of screens and ladders, being assured that the law relating thereto would be complied with and also being assured of hearty cooperation in the protection and preservation of the wild life.

From August 28 to September 9, 1917, I again visited officially Washoe, Douglas, and Churchill Counties, meeting with the farmers, taking up the matter of screens and ladders, being assured that such would be installed and ready for operation early in the spring. It seems difficult, indeed, to get the farmers started toward the installation of screens, but feel that this matter will right itself in time, and that as soon as the people can be brought to see the necessity of such action, there will be no further trouble.

September 10, 1917, a report was sent to this office, conveying the information that the Southern Pacific Railway Company had allowed a quantity of oil to escape from its sumps at Carlin, the result being

that the waters of the Humboldt River at that place were polluted to such an extent that many fish were dying and that cattle and horses in the fields were not able to drink the water. I immediately made the trip to Carlin, took the matter up with the officials of the company, inspected the entire pipe-line from the round-house to the river, but found that the water then flowing into the river from the sumps was clear. The officials admitted that a quantity of oil had gotten away from them, but assured me that there would be no further occasion for complaint, for they would see to it that no more oil would be allowed to escape from the sumps and flow into the river.

From Carlin I returned to Humboldt County and found conditions there fairly satisfactory. I was informed that a couple of men had been arrested for shooting wild ducks out of season, but upon their promise to make a contribution of \$50 each to the county fish and game fund, the deputy allowed them to go free. Such action did not meet with my approval, and I immediately caused the arrest of the guilty parties, had them appear before a Justice of the Peace at Winnemucca, where they entered a plea of "not guilty," demanding a trial by jury, the case being set for September 17, 1917. I returned to Carson City, and, after attending to the work that required attention, on the 16th of September returned to Winnemucca to attend the trial of the parties whom I had arrested. After all the evidence had been submitted, the parties having admitted they had killed the birds, the case went to the jury, the verdict being "not guilty." Such a verdict caused considerable indignation among the better class of people, but, the incident being closed, there was nothing more to be done.

During the latter part of September, 1917, visited many points on the Carson River, calling at many farms, inspecting dams and ditches, stopping at Dayton, Fort Churchill, Lahontan, then on down the Carson River to Fallon, from there to Hazen, Fernley, Wadsworth, Derby, and Reno, everywhere being received courteously and being assured of cooperation in the work in hand.

October 6 to October 15, 1917, made an extended trip to Washoe, Lander, Eureka, and Elko Counties, taking up the subject of screens and ladders with the farmers, making a general inspection of the local conditions relative to the protection and preservation of fish and game, instructing Deputy Wardens in their duties and getting personal knowledge of matters relating to this department.

October 19, 1917, in company with a member of the State Fish and Game Commission, made a thorough inspection of the Brunswick Dam, the Mexican Dam, and the so-called Lloyd Dam. We found that all of these dams were without fish-ladders. I immediately took the matter up with those in control of said dams, with the result that they each promised to install such ladders as required by law and at this time (November 1) a ladder is being built at the Brunswick Dam.

November 5, 1917, I met with the County Commissioners of Washoe County, asking that the board consent to the appointment of more help to prevent the unlawful killing of waterfowl at Washoe Lake, and also that provision be made for placing a man at the Indian Dam on the Truckee River, but without result.

November 9, 1917, it was reported that pheasants were being killed in Lyon County, but after making a trip over a greater portion of

son Valley, thoroughly investigating all points, and upon inquiry from many of the residents, was unable to find any evidence that would warrant making an arrest. At this time I reported the matter to the Sheriff of Lyon County, who assured me that he would do all in his power to apprehend the guilty parties, and would instruct his deputies to make every effort to prevent any unlawful killing of game birds.

During the remainder of the month of November made many trips along the Truckee River, thence to Humboldt County and from thence to Elko County, everywhere taking up the matter of screens and ladders, and finding that the farmers were anxious to comply with the law relating thereto, and promising that screens would be installed where water was turned into the ditches in the spring.

The month of December, 1917, was spent in traveling over many parts of the State in the discharge of duties required in connection with this department. In Douglas County, I again took up the matter of the installation of a fish-ladder in the new dam being constructed by the Douglas Milling and Power Company, interviewed the engineer in charge of the work, who assured me that a ladder would be built according to the plans and specifications approved by the State Fish and Game Commission, a blue-print of which he then had.

During this month and while at Washoe Lake I arrested a hunter who had a greater number of wild ducks in his possession than allowed by law, had him appear before the Justice of the Peace at Reno, where he entered a plea of guilty and was fined \$50. I took possession of the ducks, and, having obtained a list of the indigent poor of Reno and Elko, in company with a member of the Board of County Commissioners, distributed the birds among them. The latter part of the month of December was spent in traveling over parts of the counties of Lyon, Churchill, Washoe, Humboldt, Lander, and Elko, for the purpose of inspecting the field work; found that the deputies were using every effort to protect the wild life and that people generally were lending their support in that direction. Returning to Carson, December 31, was taken ill and spent more than three weeks under the care of a physician, being confined to my room and bed, which delayed for a time my activities in the field.

During all of the month of January, 1918, was unable to leave my home because of illness, and on February 7 was removed to my home in Elko that I might be with my family and receive proper nursing.

While in Elko the County Recorder, W. G. Greathouse, gave me the privilege of his private office, M. H. Miller, the County Treasurer, loaned me a typewriter, and, having ordered my mail sent to Elko, was enabled to conduct the affairs of the department satisfactorily. To the above-named gentlemen I owe a debt of gratitude for their kindness and assistance.

February 27, 1918, a report reached me in Elko that parties in Lyon County were taking fish illegally from the Walker River. I left Elko on February 28, stopping over at Winnemucca, where a change was made to new deputies, directions given the new deputies, many farmers interviewed, with the result that I feel that the interests of this department

are well taken care of. The people generally seem to regard the law relating to fish and game as being a step in the right direction and assuring me of hearty cooperation.

From Winnemucca I continued my journey to Yerington, arriving there March 2, 1918. I immediately set about investigating the reports of illegal fishing, with the result that one man was arrested, caught in the act of fishing out of season and without a license, also having fish in his possession, taken from the waters of the Walker River. The party was brought before the Justice of the Peace at Yerington, where a plea of guilty was entered and a fine of \$50 imposed. I remained in Lyon County for a number of days inspecting dams and ditches, interviewing farmers, being assured that steps would be immediately taken to construct fish-ladders where needed and that fish-screens would be installed before water was diverted from the streams. I am indebted to a number of the farmers of that vicinity for their kindness in taking me about the valley, for their courteous treatment and for assurance of cooperation.

March 7 returned to Carson City and, having attended to all matters requiring my attention, immediately departed for a tour of inspection over different parts of the State in the interest of this department, gaining much valuable information, and receiving much encouragement from the people, all of whom assured me that they would lend assistance in every way possible for the protection and preservation of the fish and game of the State.

March 26 made an extended trip to the extreme eastern part of the State, investigating reports of unlawful fishing, hunting and trapping, but failed to find evidence that would justify making an arrest. I found, however, a number of beaver traps in the Humboldt River near the towns of Halleck and Elburz, which I confiscated; made a thorough search of all houses in that vicinity, but failed to discover any pelts or hides of beaver or other fur-bearing animal.

March 31, 1918, I returned to Carson City, resuming the duties required in this office, this date being just one year since assuming the duties of this office. During this time I had traveled 10,815 miles, had arrested and caused to be arrested 19 persons, securing convictions in 13 cases, for which fines amounting to \$650 were collected.

During the twelve months my actual traveling expenses amounted to \$603.80. The amount allowed by law for traveling expenses is \$1,200 so that there remains a balance of \$596.20. This saving was made possible from the fact that in accordance with law the State Fish and Game Warden may accept transportation from the railroads, which transportation was courteously tendered.

April 5, 1918, made an official inspection of the fish-ladder constructed and installed at the Douglas Milling and Power Company dam in the east fork of the Carson River near Gardnerville, and found the same to be in accordance with the plans approved by the former Fish Commission.

April 17, 1918, a report reached me that certain parties were taking fish contrary to law from the Carson River near Lahontan Dam. I immediately left for that point, arriving Saturday evening and remaining over Sunday, covering much territory, but failed to discover anyone fishing at any point.

April 24 made an inspection of many screens that had been installed

and found that, owing to the muddy condition of the water and the amount of driftwood, leaves, and weeds running, it was almost impossible to keep the screens clear, the result being that the flow of water was retarded in the ditches, endangering the proper irrigation of crops.

From the 1st to the 19th of May, 1918, made many trips over different portions of the State in the discharge of duties connected with this department, and found people generally quite willing to comply with the law in all respects. About this time, began to receive many letters from all parts of the State complaining that screens installed were greatly retarding the flow of water, thereby endangering the raising of crops. I immediately began an investigation of the conditions reported and found it as reported. I therefore issued a general order to the effect that where screens were interfering with the full flow of water for irrigation purposes they might be removed, temporarily, for the reason that crops must be raised that our boys at the front might be fed.

May 26 made an official visit of inspection on the Carson River, calling at the Brunswick, Lloyd, Mexican, and other dams, making final arrangements with the owners for the installation of ladders, being assured that as soon as the water was low enough and they were furnished with plans the ladders would be built.

During the month of June, 1918, made an extended trip by auto, visiting officially Genoa, Minden, Gardnerville, Wellington, Sweetwater, Hawthorne, Walker Lake, Yerington, and other points on the route, and upon my return to Carson City immediately started for the eastern part of the State, calling at Winnemucca, Battle Mountain, Carlin, Elko, Wells, Lamoille, and other points. In each and all of the above-mentioned places conditions were found satisfactory, and I was courteously received by the people.

During the month of July, 1918, visited officially many different parts of the State, including Minden, Gardnerville, Douglas Milling and Power Company's Dam, Lahontan, Fallon, Hazen, Fernley, Wadsworth, Pyramid Indian Reservation, the Willows, Round Hole country, Gerlach, Leadville, Long Valley, Duck Flat, Buffalo Meadows, Smoke Creek, and many other points along the route, thence to Brockway, Cal., taking a boat and interviewing fishermen on Crystal Bay; thence to Glenbrook and along the lake shore to the state line, interviewing anglers and market fishermen. July 30 made a trip to Dayton and made final arrangements for the construction of a fish-ladder at the Lloyd Dam on the Carson River. The ladder at the Brunswick Dam is completed, is in every way up to the plans and specifications, and will give fish free passage up the river during the spawning season.

During the month of August, 1918, made an official trip over much of the State, including Dayton, Fallon, Ione, points on Reese River, Austin, Eureka, Diamond Valley, Ely, Baker, Snake Valley, Spring Valley, Cherry Creek, Currie, Sprucemont, Clover Valley, Wells, Deeth, Starr Valley, Halleck, Elko, Lamoille Valley, Carlin, Battle Mountain, Golconda, Winnemucca, Lovelock, Wadsworth, and many other points. During this trip I found conditions very good, the people generally appreciating the fact that the wild life of the State must be protected, the law relating to the same being strictly enforced and but little unlawful fishing or hunting reported. I can see, however, that there are a number of amendments to our present laws, which, if

adopted, would result in better protection and would prove beneficial in every way.

During the month of September, 1918, and particularly from the opening of the season for waterfowl, was kept very busy looking after the interests of this department and was ably supported by the federal authorities, with the result that the law was generally observed by our people. Two men were arrested for hunting without a license, but I found upon investigation that these men had bought licenses, but had neglected to have same with them, so the case was dismissed.

During the month of October, 1918, much of the time was taken up in traveling over many different parts of the State, including Genoa, Minden, Gardnerville, and many points on the Carson River in Carson Valley, Wellington, Smith Valley and intermediate points. Yerington, Mason, and points in Mason Valley and along the Walker River, many points along the Carson River below Dayton, Washoe Valley and Lake, Mineral County, Nye and Esmeralda Counties, and many other points. During this trip made arrangements for the trapping of pheasants and other game birds and for the shipping of same into other counties for the purpose of propagation. I also took up the matter of the pollution of the waters of the Carson River below Dayton with the Dayton Placer Recovery Company, with the result that some means will be used whereby the poisonous refuse, formerly dumped in the river, will be taken care of. I also found that the ladders at the Lloyd and Mexican dams had been constructed, but that they are not at all satisfactory and shall have to demand that others be built.

During the month of November made all arrangements for the installation of a fish-screen at the outlet of Little Washoe Lake, the farmers interested having come to the conclusion that such a screen will be the means of stopping many fish from leaving the lake and becoming stranded in the fields and meadows between the outlet and Steamboat. I also investigated a report to the effect that an illegal shipment of wild ducks had been made from Reno to California, and, having secured the evidence, had the party arrested and appear before a Justice of the Peace, where, upon his admission that he had shipped the birds, a minimum fine was imposed and paid.

During the month of December made several official trips to various parts of the surrounding country, in the interest of this department, investigating reports of illegal hunting and fishing and the illegal selling of fresh fish, but without results other than to make arrangements with the peace officers for the combined effort of all to put a stop to the practice.

During the year just past I find that I have traveled 6,115 miles by auto and 855 miles by other means. The expenses during the year 1918 amounted to considerably more than in 1917, owing to the fact that as soon as the Government took over the railroads my passes were called in and I was required to pay transportation.

STATUS OF GAME

Valley Quail

Information received at this office from deputies, from sportsmen, and from personal observation, leads me to believe that there has been a wonderful increase in the numbers of the valley quail in the last two seasons. Especially is this true in the counties of Churchill, Clark,

on, and Mineral. There are a number of small flocks in many other counties, which are protected by ordinance passed by County Commissioners and approved by this office in accordance with law, and which are reported as being well taken care of and increasing satisfactorily. Permits have been issued from this office for the trapping and transportation of a number of these birds for propagation purposes in various parts of the State and are reported as doing remarkably well.

Mountain Quail

The mountain quail has become almost extinct in this State, there being but few scattering flocks. It is generally conceded that the severe winters of recent years, the scarcity of food, and the shooting of the birds by unscrupulous hunters have caused the extermination of this beautiful game bird.

Pheasants

The ring-neck pheasants are doing remarkably well in all parts of the State where propagated and are increasing at a wonderful rate. I am convinced that this elegant game bird would do well in many other parts of the State, particularly in the southern counties, and have made an effort to arrange for trapping and shipping a number to other counties for propagation, but without satisfactory results.

Grouse

The mountain grouse is another game bird that is almost extinct in this State, there being but very few reported during the last two seasons. This beautiful game bird inhabits the higher mountain regions, and it is presumed that the same causes responsible for the extinction of the mountain quail are responsible for the scarcity of the mountain grouse.

Sagehens

There has been a very material increase in the numbers of the sagehen or sage-grouse in the last two years, due, in a measure, to the fact that the law relating to game has been rigidly enforced in all parts of the State where this bird is found. Then, too, the County Commissioners of a number of the counties, where but few sagehens are to be found, have passed ordinances, approved by the State Fish and Game Warden, as provided by law, extending the closed season for a number of years, so that the birds are pretty generally protected and are increasing in numbers yearly. It is our judgment, however, that there could be an absolute closed season for the sagehen for a number of years, for the reason that Idaho, Utah, and Oregon have passed laws closing the season for a number of years, and California allows but a small bag (four in any one day or eight in any one week), and that only in the extreme eastern portion of the State, so that it can readily be seen that the hunters of those States will apply for and obtain licenses for hunting in Nevada, the result being that thousands of these birds would fall to nonresident hunters and greatly reduce the numbers.

Doves

The dove has had no protection in this State for many years, the consequence being that there has been an unlimited slaughter of this beautiful little game bird. A number of the counties, appreciating the fact that unless some action was taken this bird would soon follow the

passenger pigeon to extinction, have passed ordinances, approved by the State Warden in accordance with law, looking toward the protection and preservation of the dove. Fortunately the Federal Government has taken the dove under its protection and has fixed an open and closed season and bag limit.

Waterfowl

The weather conditions during the season just past seems to have been particularly favorable for the hatching and rearing of all waterfowl, especially the wild duck. Great numbers of these birds were noticed during the summer months, but owing to the dry weather during the late summer and early fall months, the water receded from the feeding grounds and the birds were compelled to seek their food elsewhere, taking their flight south very early in the season, so that our people got but little good shooting. Wild geese and all shore birds were very numerous, but few have been taken, the geese being very wild and hard to approach. The shore birds being safe, for the reason that the larger birds having migrated, it was unprofitable to hunt the smaller bird for itself alone.

Deer

Reports from all over the State are to the effect that deer are plentiful in some parts and increasing, while in other parts it is reported that they seem to be decreasing. The increase is due to the fact that sheep grazing on the mountain sides have driven the deer to the higher altitude where it is difficult to reach them and but few are killed. A few arrests have been made for the unlawful killing of deer, but, on the whole, the law relating thereto has been pretty generally complied with.

Antelope

Antelope are becoming quite plentiful in several sections of the State. In fact, reports are to the effect that where deer and antelope are both found, the antelope outnumber the deer. The closing of the season until 1930 for this animal has been decidedly beneficial in protecting the antelope and increasing the numbers. The antelope would do well in many other parts of the State, and it is to be regretted that there are not more of its kind that we might propagate a number in other sections.

Elk

The elk is a species of big game that I feel confident would do well in many parts of our State, yet we have none at this time. However, an effort is being made to ship about eighty head from the Jackson Hole country into Douglas County, all necessary arrangements having been made for their care for such time as they will have to be kept in confinement.

In the last two seasons I have been ably assisted in the protection of the game birds and animals and in the enforcement of the game laws by the National Forest Supervisors and Rangers, to all of whom I am deeply grateful.

RECOMMENDATIONS FOR LEGISLATIVE ACTION

Providing for the establishment of State Game Preserves in various parts of the State, designated by metes and bounds, name and number, selected and established by the State Fish and Game Warden with the

Consent and approval of the State Fish and Game Commission and imposing a penalty for violation of the laws relating thereto.

Providing for the appointment of all Deputy Fish and Game Wardens by the State Fish and Game Warden, fixing their salaries and defining their duties.

Providing for the protection of cotton-tail rabbits, designating an open and closed season and fixing the bag limit.

Providing for an open and closed season for fur-bearing animals, designating such fur-bearing animals, and the licensing of trappers.

Providing for the licensing of taxidermists, defining such, and fixing an annual license fee at ten (\$10) dollars.

Providing for the issuance of a nonresident fishing license for a period of thirty days and fixing the license fee at two (\$2) dollars.

Providing for the regulation of the use of firearms, requiring all persons over the age of 14 years to secure a license before permitted to carry any firearm afield as though in the act of hunting, and regulating the use or carrying of firearms by children under the age of 14 years without written permission of parent or guardian.

Providing for the creation of a State Fish and Game Preservation Fund, placing the same in the hands of the State Treasurer, who shall deposit to the credit of said fund all moneys collected from the sale of fish and game licenses in this State and all moneys collected from any source connected with the Fish and Game Department.

Providing for the transfer of all moneys and all other property pertaining to the credit of each County Fish and Game Fund to the State Fish and Game Preservation Fund, and providing for the payment of all necessary expenses of maintaining the Fish and Game Department, such as the payment of salaries and actual and necessary expenses of wardens, the purchase of office supplies, and the purchase of game birds and animals for propagation purposes, from said State Fish and Game Preservation Fund upon vouchers approved by the State Fish and Game Warden and by the State Board of Examiners.

Providing for the confiscation and sale of all seines, nets, fishing tackle, guns, powder, explosives, lime, poison, drugs, and all other means and devices used, or about to be used, in the unlawful taking, catching, killing, or capture of fish or game of any kind, and the creation and sale of all hides, pelts, carcasses, or any portion of any animal, bird, or fish protected under the laws of this State and taken in violation thereof, the proceeds of any such sale to be turned over to the State Treasurer to the credit of the State Fish and Game Preservation Fund.

Respectfully submitted,

C. W. GROVER.

State Fish and Game Warden.

TABULAR STATEMENTS

STATEMENT SHOWING THE NUMBER OF LICENSES SOLD AND AMOUNT OF MONEY COLLECTED

From April 1, 1917, to December 31, 1917

<i>County</i>	<i>Number sold</i>	<i>Amount collected</i>	<i>County's proportion</i>	<i>State's proportion</i>
Churchill.....	387	\$387.00	\$258.00	\$129.00
Clark.....	198	218.00	146.33	72.67
Douglas.....	889	535.00	356.67	178.33
Elko.....	1,707	1,813.00	1,208.66	604.34
Esmeralda.....	56	56.00	37.33	18.67
Eureka.....	132	182.00	121.33	60.67
Humboldt.....	956	984.00	642.67	321.33
Lander.....	372	372.00	248.00	124.00
Lyon.....	550	550.00	366.67	183.33
Lincoln.....	156	156.00	104.00	52.00
Mineral.....	60	60.00	40.00	20.00
Nye.....	424	424.00	282.67	141.33
Ormsby.....	669	747.00	498.00	249.00
Storey.....	92	92.00	61.33	30.67
Washoe.....	2,214	2,361.00	1,574.00	787.00
White Pine.....	1,206	1,226.00	817.34	408.66
Totals.....	9,618	\$10,143.00	\$6,762.00	\$3,381.00

NUMBER SOLD AND AMOUNT COLLECTED, 1918

Churchill.....	420	\$420.00	\$280.00	\$140.00
Clark.....	160	160.00	106.67	53.33
Douglas.....	337	427.00	284.67	142.33
Elko.....	2,340	2,881.00	1,920.67	960.33
Esmeralda.....	38	38.00	25.34	12.66
Eureka.....	236	236.00	157.33	78.67
Humboldt.....	1,116	1,116.00	744.00	372.00
Lander.....	432	432.00	288.00	144.00
Lyon.....	510	510.00	340.00	170.00
Lincoln.....	95	98.00	65.33	32.67
Mineral.....	76	76.00	50.67	25.33
Nye.....	491	491.00	327.34	163.66
Ormsby.....	517	597.00	398.00	199.00
Storey.....	85	85.00	56.66	28.34
Washoe.....	2,463	2,637.00	1,758.00	879.00
White Pine.....	1,300	1,300.00	866.66	433.34
Totals.....	10,616	\$11,504.00	\$7,669.34	\$3,834.66

FINANCIAL STATEMENT

April 1, 1917, to December 31, 1918

Warden's salary.....	\$3,150.00	State's proportion of licenses sold.....	\$7,215.66
Traveling expenses.....	1,877.33	Less Warden's salary, traveling and office	
Office expenses.....	133.12	expenses.....	5,157.45
Total.....	\$5,157.00	Credit balance.....	\$2,058.21

**STATEMENT SHOWING NUMBER OF ARRESTS AND CONVICTIONS
HAD, AND AMOUNT OF FINES COLLECTED**

From April 1, 1917, to December 31, 1918

<i>County</i>	<i>Arrests</i>	<i>Convictions</i>	<i>Fines collected</i>
Churchill.....	None		
Clark.....	1	1	\$50.00
Douglas.....	None		
Elko.....	17	14	550.00
Esmeralda.....	None		
Eureka.....	4	1	50.00
Humboldt.....	3	1	10.00
Lander.....	None		
Lyon.....	1	1	50.00
Lincoln.....	None		
Mineral.....	None		
Nye.....	1	1	50.00
Ormsby.....	None		
Storey.....	None		
Washoe.....	8	6	270.00
White Pine.....	None		
Totals.....	35	25	\$1,080.00



STATE OF NEVADA

ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

Nevada School of Industry

1918

E. J. MILNE, Superintendent



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : JOE FARNSWORTH, SUPERINTENDENT

1919



REPORT OF NEVADA SCHOOL OF INDUSTRY

ELKO, NEVADA, December 31, 1918.

HON. EMMET D. BOYLE, *Governor of the State of Nevada.*

DEAR SIR: I have the honor to submit for your consideration my first annual report of the Nevada School of Industry.

Owing to my limited connection with the school this report will necessarily be brief.

This school was opened for the reception of the delinquent and incorrigible child by your proclamation of June 15, 1915.

It is perhaps in keeping with the best thought of the day to consider such boys as we shall entertain from time to time not as criminal, but as being unfortunate, misguided, misinformed, dependent, neglected, often being the sum total of their environment, of heredity, and of broken homes, causing a break in the parental chain of healthy, moral, mental and physical growth.

Certain causes will usually produce certain effects. Mental and physical defects usually produce delinquency and incorrigibility. The discovery of this incorrigibility brought into existence juvenile courts. Abnormal conditions produce abnormal results. Children mentally and physically deficient, poorly fed, poorly clothed, neglected, ill-treated, forbidden parental love, nestled in poorly lighted, ill-ventilated, and unsanitary homes usually portray or disclose their unnatural conditions by their acts. Realizing then that there is a cause for such delinquency should we not treat the condition as well as the child? If we improve the surroundings and the environment can we not hope for improved conditions in the child? Perhaps the present tendency is too much to treat the child as malicious—regard too much *what* he does instead of *why* he does.

It occurs to me that our greatest and really most effective work is that of probation. The function of the probation officer should be to investigate and adjust conditions rather than to be out apprehending and looking for opportunities to detect boys violating some trifling ordinance or ill-advised law.

Boyish pranks and their activities are often taken too seriously. Healthy, strong, vigorous, and active lads are often made to appear in court for trifling things that every normal child must be expected to do—or at least he will do. Untrained, though well-meaning, persons often do a grave injustice to juvenile offenders by bringing them into court when common-sense could have been much more effectively used.

The taking of a child into court should be done only after the faithful and untiring efforts of the officer to adjust have signally failed. The natural parents of a child, unless mentally or morally unfit, should not too soon be deprived of their sacred and God-given charges to become wards of the court and state. This should be done sparingly and only when it is conclusive that the best interests of the child is being served.

I realize that rules, regulations and laws must need be, but I am of the opinion that no rule, no regulation to maintain discipline and no

law is greater than a boy, and, if necessary, either or all might be suspended that the best interest of the child be served.

The first thing for us to determine upon receiving a boy is whether he is normal, whether mentally or physically deficient. This being determined the treatment of the case is more effective.

No child can be educated or treated in a definite period, and only those who are in daily contact with the child are truly eligible to safely determine when he will be released. I would therefore urge that the releasing, paroling, or discharging of the cadets be left solely with the Board of Government.

The spirit of the juvenile law is to segregate the delinquent from the criminal—to regard the child not as criminal but as neglected, abandoned, ill-treated, needing care, comfort, education and support. Therefore I again strongly urge that the handling of the boys, so far as possible, be as far removed from the criminal, and that his court and the bringing of cadets to this institution be handled by this institution thus giving us somewhat of an opportunity to investigate the boy and his home, his surroundings, his environment, and will eliminate to a considerable extent the necessity of long confinements in county jail and the close association and the penal code. The boy's best interest demand this.

It is strongly urged that a modern system of supervision and connection with the boys on parole and the school be maintained to the end that paroled boys too may feel the protection and interest of the school after his leaving—that the Board of Government be empowered to find homes and bind out, or place out for legal adoption when necessary such children who have no homes available for them after they have earned their required credits and are eligible for parole.

Under the Act of 1913, approved March 26, the establishing of the school was made. Under its wise provisions the purpose of this school was: "They shall adopt a system of government embracing such rules and regulations as are necessary for the guidance of the teachers, officers, and employees, for the regulation of the hours of labor and study, for the preservation of order, for the enforcement of discipline and the *industrial* training of its inmates. The ultimate purpose of such instruction, training and discipline and industries shall be to qualify inmates for profitable and honorable employment and enable them to lead useful lives after their release from the institution rather than to make said institution self-supporting." In compliance with the spirit and the letter of the said law we most respectfully urge adequate appropriation for the establishment of two branches of industrial training, namely, manual training and printing.

IMPROVEMENTS

Plans and specifications having been drawn up for a hospital and superintendent's cottage, the immediate need of such buildings being apparent, and the necessity for a building for manual training, we most respectfully urge sufficient appropriation for same.

BUILDINGS

Your excellency is familiar with the present building and equipment of the institution, no special additions having been made since the last report of former Superintendent Kyle.

POPULATION

The number of boys having been committed to the institution since its opening is 46. There are at present 15 boys in attendance. Owing to the fact the influenza epidemic has been so serious, and the further fact that during said period further commitments have been held in abeyance until improvement be shown, the paroling of five boys and the releasing of one boy to the Federal U. S. Immigration Inspector for transportation, makes our present population small at this particular time. Those present represent the following counties:

Washoe County.....	5
Elko County.....	4
White Pine County.....	2
Clark County.....	1
Lincoln County.....	1
Lyon County.....	1
Humboldt County.....	1
Total.....	15

Nationalities

American	5
Indian	3
Italian	2
English	1
Irish	1
Jewish	1
Chinese	1
German	1
Total.....	15

Family History of Boys in Attendance

Both parents dead.....	3
Mother dead.....	3
Father dead.....	2
Parents separated.....	2
Parents living together.....	5
Total.....	15

Boys Confined in County Jails Before Coming

A—Confined.....	91 days
B—Confined.....	32 days
C—Confined.....	31 days
D—Confined.....	10 days
E—Confined.....	9 days
F—Confined.....	9 days
G—Confined.....	5 days
H—Confined.....	3 days

Total days confined.....190 days

Average for above boys, 23.75 days in county jails. Above information furnished by eight boys now present.

SUGGESTIONS

In view of the permanency of this institution and the further fact at said institution will continue to grow and increase, necessitating additional buildings and additions, it seems opportune to request the services of the State Engineer to assist in the laying out of the future plans for the school.

APPRECIATION

May I at this time take this means of extending sincere appreciation to the Governor, Secretary of State, State Controller, State Auditor, State Treasurer, Attorney-General, and the Board of Government for their prompt and active interest in the school.

NEEDS FOR MAINTENANCE

An estimate for the amount required for the coming two years is herewith attached and made part of this report.

CONCLUSION

An earnest appeal is now made to the Governor, state officials, and the legislative bodies for a liberal appropriation for maintenance, instruction and improvements of the school, and we respectively solicit your deepest interest in the boys—the citizens of tomorrow.

Respectfully submitted,

E. J. MILNE, *Superintendent.*

ESTIMATES FOR THE YEARS 1919-1920

All estimates are based upon an average attendance of 25 students and cover a period of two years.

<i>Salaries</i>		
Superintendent, \$200 per month for 2 years		\$4,800.00
Assistant superintendent and teacher, \$125 per month for 2 years		3,000.00
Manager, \$100 per month for 2 years		2,400.00
Matron, \$65 per month for 2 years		1,560.00
Chef and cook, \$85 per month for 2 years		2,040.00
Manual-Training instructor, \$100 per month for 2 years		2,400.00
Printing Instructor, \$100 per month for 2 years		2,400.00
Physician, \$35 per month for 2 years		840.00
Dentist, \$8.33 per month for 2 years		200.00
		\$19,640.00
<i>General Expenses</i>		
Light and power, at \$125 per month for 2 years		3,000.00
Equipment and supplies, Printing Department		1,000.00
Equipment and supplies, Manual Training Department		1,000.00
Food and subsistence and ice, \$400 per month for 2 years		9,600.00
Gasoline and upkeep of auto, \$25 per month for 2 years		600.00
Drugs, 2 years		240.00
Farm implements		100.00
Coal, 6 cars for 2 years		3,000.00
Postage and stamps for 2 years		200.00
Telephone and telegraph for 2 years		300.00
School supplies for 2 years		200.00
Laundry supplies and barn brooms for 2 years		150.00
Seeds, including spuds, garden and alfalfa		400.00
Sheriffs, bringing cadets and per diem		900.00
Apprehending and returning cadets		924.00
		21,614.00

(Above based on actual cost past 2 years)

<i>Clothing</i>		
Suits, 1 suit per boy per year for 2 years at \$15		\$750.00
Dress shoes, 1 pair per year per boy at \$4.50		225.00
Work shoes, 3 pairs per year per boy at \$4.50		675.00
Overalls, 4 pairs per year per boy at \$2.75		550.00
Shirts, 6 per year per boy for 2 years at \$1.50		450.00
Night shirts, 2 per year per boy for 2 years at \$1.50		150.00
Sox, 6 pairs per year per boy for 2 years at 25 cents		100.00
Straw hats, 1 per year per boy for 2 years at 40 cents		20.00
Dress hats, 1 per year per boy for 2 years at \$3		150.00
Gloves, 2 pairs per year per boy for 2 years at \$1		100.00
Overshoes, 1 pair per year per boy for 2 years at \$2.25		112.50
Ties, 2 ties per year per boy for 2 years at 35 cents		35.00

Garters, 2 pairs per year per boy for 2 years at 25 cents.....	\$25.00	
Underwear, 4 suits per year per boy for 2 years at \$1.50.....	300.00	
40 yards mercerized table linen.....	26.00	
3 dozen mercerized napkins.....	7.50	
60 bath towels.....	40.00	
60 yards unbleached crash toweling.....	15.00	
1 bolt unbleached pillow-slip muslin.....	16.00	
36 yards bleached sheeting, 72 inches wide.....	30.00	
8 white bed spreads, full size.....	15.00	
150 yards strong unbleached muslin.....	37.50	
25 pairs blankets.....	100.00	
4 dozen face towels.....	12.00	
416 packages gold dust.....	120.00	
300 packages borax chips.....	85.00	
2 rugs for officers' rooms.....	50.00	
200 electric-light globes at 35 cents.....	70.00	
Miscellaneous items not enumerated.....	200.00	
		\$4,466.50
<i>Athletic Equipment, Amusements, Magazines, Etc.</i>		
Motion pictures, baseball, football, basketball, swimming suits, appropriate magazines, entertainments, records and rolls, etc.....		600.00
<i>Miscellaneous Household Supplies</i>		
2 cases sapollo.....	\$13.50	
2 cases chloride of lime.....	14.00	
1 case candles.....	11.50	
3 cases dutch cleanser.....	12.00	
6 push brooms.....	18.00	
12 mop-sticks.....	6.00	
3 dozen house brooms.....	51.00	
8 whisk brooms.....	2.80	
8 galvanized pails.....	10.00	
1 dozen scrub brushes.....	2.25	
1 case bon ami.....	3.50	
2 cases lye.....	11.00	
20 pounds silver gloss starch.....	3.50	
4 cases toilet soap.....	19.00	
6 cases toilet paper.....	60.00	
100 pounds sal soda.....	4.50	
8 cases savon soap.....	44.00	
4 dozen hair combs.....	12.00	
4 dozen tooth brushes.....	12.00	
12 quarts liquid blue.....	2.25	
6 gallons cedar polish.....	15.00	
Improvements and repairs.....	1,000.00	
		1,327.80
<i>Office Supplies</i>		
For two years.....		200.00
<i>Superintendent's Cottage</i>		
Plans and specifications drawn up.....		5,000.00
<i>Hospital and Equipment</i>		
Plans and specifications drawn up.....		5,000.00
<i>Manual Training Building</i>		
Building and equipment.....		5,000.00
Grand total.....		\$62,848.30



STATE OF NEVADA

BIENNIAL REPORTS

OF THE

**Railroad and Public Service
Commissions of Nevada**

1917-1918

J. F. SHAUGHNESSY - First Associate Commissioner
W. H. SIMMONS - Second Associate Commissioner
E. H. WALKER - - - - - Secretary
F. O. BROILI - - - - - Chief Engineer



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : JOE FARNSWORTH, SUPERINTENDENT

1919



BIENNIAL REPORT OF RAILROAD COMMISSION AND PUBLIC SERVICE COMMISSION

OFFICES OF THE
RAILROAD AND PUBLIC SERVICE COMMISSIONS OF NEVADA,
CARSON CITY, NEVADA, December 31, 1918.

HONORABLE EMMET D. BOYLE, *Governor of Nevada, Carson City, Nevada.*

DEAR SIR: Since our last report was submitted to you, this Commission, and we feel that we may say the State of Nevada, has sustained the loss of one of its finest and ablest public men. Honorable Horace F. Bartine, Chief Commissioner of this Commission since its creation, died in the town of Winnemucca on August 27 last.

RESOLUTIONS OF RESPECT AND SYMPATHY

At the meeting subsequent to Judge Bartine's death, the following resolutions were ordered spread upon the minutes:

WHEREAS, The death of our revered Chief Commissioner and Chairman, Honorable HORACE F. BARTINE, which occurred August 27, 1918, is deeply deplored by this Commission, in whose efforts and accomplishments his work was a most vital factor; and

WHEREAS, By his death not only the Commission but the State of Nevada has suffered the loss of a man whose public services were of inestimable value, and whose ability and integrity were of the highest character; now, therefore, be it

Resolved, That this Commission expresses its sincere sorrow at the loss of its beloved associate and its deepest sympathy with his bereaved family; and be it further

Resolved, That these resolutions be spread upon the minutes of this meeting and a copy hereof be forwarded to Mrs. Horace F. Bartine.

J. F. SHAUGHNESSY,
First Associate Commissioner,

W. H. SIMMONS,
Second Associate Commissioner.

E. H. WALKER, *Secretary.*

The following resolutions were adopted by the National Association of Railway and Utilities Commissioners assembled in convention at Washington, D. C., on November 14, 1918:

WHEREAS, This association has sustained a severe loss in the death during the last year of Honorable HORACE F. BARTINE, late Chief Commissioner of the Railroad Commission of Nevada:

Resolved, That the association hereby expresses its sorrow at his demise, its great regret at the loss of his valuable services and valued companionship, and its sympathy with his bereaved relatives. For many years he served his State ably and faithfully in public activity, and made a name of honor and a place of dignity for himself in public life;

Resolved, further, That this resolution be adopted by a rising vote of this body, that it be spread on the minutes of the association and communicated officially to the Railroad Commission of Nevada.

(Signed) JAMES B. WALKER, *Secretary.*

SUMMARY OF WORK

Since the death of Judge Bartine, the work of the Railroad and Public Service Commissions has been carried forward by Commission J. F. Shaughnessy and W. H. Simmons, who now have the honor submit the biennial report of this body for the years 1917-1918.

During the past two years, two hundred and sixty-nine (269) cases were handled by the Commissions, both formal and informal. A detailed history of these cases follows later in the report. Practically all cases have at this time been decided. Action on a few cases dealing with freight rates and passenger fares have been held in abeyance during the current year because the United States Railroad Administration assumed jurisdiction over both state and interstate regulations for war emergency purposes. As the successful winning of the war was paramount to every other consideration, we did not contest the jurisdiction right of control over its own internal commerce which, under the fundamental law of the land, is reserved to the State. Now that the war emergency has passed, this Commission will, from this time forward, assert and exercise its jurisdiction over the regulation of state commerce. This question will be covered in this report under the caption of "States' Rights."

Since the Commission was created, in 1907, there has been accomplished by it a marked improvement in service, a correction of improper practices and undue discrimination, and proper reductions made in unreasonable and unjust rates of the railroads and public utilities. Results, in this behalf, have accrued from year to year and are today a continuing beneficial relief from unjust exaction in charges, improper practices and inadequate service. Without the specialization that has been accorded this work by the Commission, it is not unfair to suggest that the relief which the people of our State now enjoy would be comparatively small. In this connection, the importance of maintaining this character of state administrative service for the future cannot be overemphasized. Otherwise, former discriminatory and unjust practices and charges might easily be reestablished and doubtless would be.

ESTIMATED ANNUAL SAVING IN CHARGES TO THE PUBLIC

Exemplifying what is said above, and without detailing the history of the cases leading up to the many orders and adjustments which have been made, there is set forth below the estimated yearly saving to the public in railroad and public utility charges which is being effected by the Commission.

Southern Pacific passenger fares	\$27.00
Verdi lumber rates	89.00
Hay rates, Mina to Goldfield	2.95
Hay, grain and flour rates, from Minden, Reno, Fallon, Lovelock and Wabuska to Tonopah and Goldfield	16.00
Southern Pacific class rates in Nevada	25.45
Coal rates, Reno to Carson	3.01
Wood rates, Reno to Virginia and Truckee Railway points	7.68
Carried forward	\$171.11

Brought forward.....	\$171,113.72
Nevada Northern Railway, freight rates.....	115,936.02
Nevada Northern Railway, passenger fares.....	43,128.00
Ice rates, Truckee to Dayton.....	900.00
Machinery and structural iron, San Francisco to Dayton.....	1,855.00
Express rates, Wells Fargo & Co. Express.....	14,100.00
Wood rates, Loyalton to Sparks.....	364.00
Virginia and Truckee Railway, passenger fares.....	16,650.00
Coal rates, Utah and Wyoming to Nevada.....	13,736.00
Telegraph rates, Western Union Telegraph Company.....	20,000.00
Express rates, American Express Company.....	500.00
Switching charges, Wabuska to Thompson.....	1,500.00
Fruit and vegetable rates.....	20,000.00
Empty carriers, second-hand, returned.....	2,225.00
Mineral-water rates.....	500.00
Flour rates adjusted to basis of \$1 per ton in excess of grain rates.....	3,000.00
Rates on flour, Reno to Western Pacific Railroad points.....	250.00
Fuel wood rates, Verdi to Reno.....	5,000.00
Freight rates, California points to Fallon and other Nevada and California Railway (Southern Pacific) branch points.....	1,000.00
Ore rates, advance of 10 per cent denied on Pioche Pacific Railroad.....	875.00
Total annual savings, Reno, or Nevada Rate Case.....	200,000.00
Total.....	\$632,634.74

INDIRECT SAVINGS SECURED

Further, as a result of the very substantial reductions secured by the Nevada Commission in 1910 in the west-bound transcontinental class rates, the Pacific Coast jobbers brought a counter case and secured reductions in the class rates between California and Nevada points. This action was taken for the purpose of offsetting the effects of the Nevada case and of maintaining in so far as possible the ability of the Sacramento and San Francisco jobbers to distribute eastern-manufactured goods in Nevada. But this reduction also covered the products of California, which are used throughout our State in large volume, and, therefore, as a result of the action in question, we have indirectly secured a saving in freight charges which amounts to approximately \$195,000 annually.

CASES ADJUSTED BY THE RAILROAD COMMISSION

Since its creation, the Railroad Commission of Nevada has handled one thousand two hundred and sixty-seven (1,267) cases, large and small, including one hundred and eighty-three (183) refunds, and five hundred and eighty (580) authorities for reduction in rates on less than statutory notice, and, therefore, by the administrative action of the Commission there has resulted a saving to the people of Nevada of \$632,634.74 annually, \$200,000 of which has been secured before the Interstate Commerce Commission in the Nevada rate case, covering west-bound transcontinental rates; in other words, by the elimination of the back-haul charges on this traffic destined to main-line Nevada points.

CASES ADJUSTED BY THE PUBLIC SERVICE COMMISSION

The Public Service Commission, which is officered and administered by the same official personnel as the Railroad Commission, and which was established in 1911, has, since its creation, handled one hundred and eighty three (183) cases of public utility rate and service regulation, which saves to the people of Nevada approximately \$90,000 annually.

SAVING TO THE PEOPLE BY BOTH DEPARTMENTS OF THE COMMISSION

Combining these figures—namely, the \$632,634.74 shown for the railroad department, and the \$90,000 saved by the public service department—it will be noted that the Railroad and Public Service Commission has by direct action effected and is effecting a total annual saving to the people of Nevada of \$722,634.74.

RAILROADS AND PUBLIC UTILITIES TREATED FAIRLY AND RATES ORDERED INCREASED WHERE JUSTICE DEMANDED

While these substantial and far-reaching benefits have been secured for the people of Nevada by the Commission, no arbitrary or unfair action has been taken against the railroads and public utilities. On the contrary, they have been treated fairly and with consideration. Subject to the qualification that charges must be reasonable to the public, they have, as justice demanded in each case, been granted fair earnings returns on either the investment, physical or present commercial value of their property. In this behalf, rate increases as well as reductions have been ordered, and this is the policy of just and reasonable regulation which has been adopted and followed by the Commission. Under this policy the railroads and public service utilities of the State have prospered and the development thereof has in no wise been retarded. This is evidenced by the fact that since 1907, when the Railroad Commission was created, the railroads have increased by the construction of new lines from 1,536 miles to 2,317 miles for the period ending December 31, 1917. Again, the gross earnings creditable to this Nevada mileage during said period have increased from \$20,000,000 in 1907 to \$27,422,000 for the year 1917; and, in the same connection, the prosperity of the public utilities of the State under regulation is evidenced by the fact that, whereas their gross earnings for the year 1911, when the Public Service Commission was created were \$1,810,000, they show a growth to \$2,233,000 for the year ending December 31, 1917.

COST CONTRASTED WITH SAVINGS

The cost of performing this important and beneficial service to the people of Nevada has averaged approximately \$25,000 per annum for salaries and appropriations for necessary expenses.

COST OF OTHER STATE COMMISSIONS

Compared with this cost, the annual appropriations of other State commissions covering similar railroad and public utility commission service are as follows:

Arizona.....	\$28,500
California.....	350,000
Colorado.....	48,460
Idaho.....	29,215
Montana.....	41,400
New Mexico.....	30,000
Oregon.....	40,000
Utah.....	25,000
Washington.....	87,750

COST OF NEVADA COMMISSION PER CAPITA TO PEOPLE

Our expenditures may be viewed from another standpoint. The total property assessment valuation for the current year in Nevada

\$198,000,000, from which it follows that the annual cost of the Railroad and Public Service Commission, namely, \$24,250, amounts to the payment in taxes of only 1.2 cents on each \$100 of assessed valuation, or a tax of 12 cents on each \$1,000 of assessed valuation, for the protection afforded by the Railroad and Public Service Commission. Compared with this cost, the reductions in rates which have been directly brought about by the Commission, and not counting the aforesaid indirect reduction on California products, is resulting in an estimated annual saving to our State of \$722,634.74, or a per capita saving of \$6.45 based on Nevada's estimated population of 112,000.

APPROPRIATIONS NEEDED AND REASONS THEREFOR

These figures speak for themselves and indicate clearly that the Railroad and Public Service Commission is more than self-supporting in the rendering of a highly essential and necessary service to the people of the State.

The service rendered by the Nevada Commission before the Interstate Commerce Commission and the United States Railroad Administration, where we have, upon complaint of shippers or communities or in behalf of the State at large, acted in the capacity of attorneys in fact, is authorized by the Railroad Commission Act, and incidentally is one of the most important and difficult duties which is placed upon the members of this Commission. In this connection, it may be stated that there is also raised for consideration at the present time the highly important question whether all power over railroad rate and service regulation shall be surrendered to the States and centralized in the hands of federal tribunals made up of officers largely from other sections, who are not familiar with our peculiar conditions and who would not be sympathetic with our efforts to gain rate equality with large industrial and commercial centers. These tribunals have favored such centers in the past and doubtless will, in so far as possible, do so in the future. Legislation with this object in view will doubtless soon be proposed in Congress and when it is under hearing and consideration it is important that Nevada should be represented. There is also the long-and-short-haul legislation, the passage of which must be urged, and, in the event of further hearing being held, it is vitally necessary that Nevada should have a representative or representatives present. Further, because of the present war control and operation of the railways, and which by law continues for twenty-one months after peace is signed, an increasing amount of business must be transacted at Washington, Chicago, and other regional centers from time to time. In this behalf, if Nevada is to secure the best results for its producers and consumers, adequate provision must be made so that it can be represented at various regional and nation-wide conferences of state representatives for the purpose of formulating a concerted plan of action in presenting cases to the Railroad Administration. This is necessary because, under the plan of regulation adopted by the Railroad Administration, action is now being proposed covering large sections or regions of the country, and not by States, as in the past. Therefore, under federal control, questions of the gravest importance are being raised for consideration and solution. In this behalf, there is an immense volume of study, research and difficult work that must be given to an adequate preparation of these cases

dealing with the future welfare of our State and, thereafter, the presentation before the proper federal tribunals.

The maintenance of an effective Commission will be as necessary under permanent federal control and centralization, if it is brought about, as was formerly the case under the separate regulation of state and interstate commerce.

The data, the records and the information that the Commission has available on the railroad question are invaluable, and care should be taken not to treat the value of this service lightly. In this behalf, it is interesting to note that the railways will, for the future, as they have in the past, continue to maintain within the State their executive, train, statistical and legal organizations, including an exposition of the railroad side of the question through the medium of the news and advertising columns of the press, from time to time. Therefore, the shipping producers and consumers of Nevada will need the authoritative information and the official representation which have been accorded them by the Commission in the past.

The proposed centralization of power covering regulation of the railroads in the hands of the Railroad Administration at Washington, made up almost entirely of former railway executives and attorneys to the exclusion of the sovereign power of the various States, will, we are sure, be found, we are sure, a panacea for all the troubles which arise on the public side of the question.

Pending the solution of this question and also the imperative necessity of adequate representation on behalf of the State, for the reasons above outlined it is important to bear in mind that the cost of railroad fares, the cost of living, the cost of materials and supplies, and, in fact, the cost of everything entering into the administration of the Commission is, because of the abnormal conditions created by the war, very much greater than in former years, and that, therefore, the appropriation for the work of the Commission will not reach as far as it formerly did.

The traveling expenses of the Commission, incurred in the prosecution of business outside of the State during the past two years, have amounted to approximately \$3,000. These expenditures have been urgently necessary in prosecuting cases before the Interstate Commerce Commission, the United States Railroad Administration, and before Congress, at Washington, D. C., in the matter of transcontinental rates and in support of long-and-short-haul legislation. In this behalf, many other State Commissions are given specific appropriations by their Legislatures to defray the cost of conducting such cases at Washington for the protection of their people. As much as \$7,500 per annum is specifically appropriated for this purpose in Iowa, and all other State Commissions use such amounts from their general appropriations as are necessary to carry on such cases properly.

Incidentally, the railroads, in the defense of these Washington cases, are represented by able officers and counsel. These men invariably have superior accommodations at the higher class hotels, the cost of which ranges from 50 to 100 per cent above the \$5-per-day limitation which is placed upon the members of the Nevada Railroad Commission. While adequate to cover expenses on official business within the State, \$5 per day is insufficient when public officers are required to travel and transact business in a representative capacity outside the State.

In order to enable our chief executive, members of the Legislature, state officers, and Railroad Commissioners, when required to leave the State in a representative capacity, to make a showing equally creditable to that made by other state representatives and the opposing forces which our representatives must meet, this limitation should be removed and the matter entrusted to the State Board of Examiners for just and reasonable administration.

The appropriation for the Railroad and Public Service Commission for the ensuing two years should be made \$12,000 per annum, including \$500 per annum for said period to cover Nevada's proportion of the support of the National Association of Railway and Utilities Commissioners' Valuation Committee, which is located at Washington, D. C., for the purpose of securing the federal valuation of railways by state lines.

This appraisal has been under way for the past several years, and it is estimated by the Interstate Commerce Commission that it will take until and including 1920 to complete it. The valuation is of great importance to our State for condemnation, taxation and rate-fixing purposes, and, as all States are participating in the cost of maintaining the committee in question, in proportion as their resources justify, Nevada should do its share by continuing the appropriation referred to. The said amount of \$500 per annum was appropriated for this purpose for the years 1917-1918 and has been contributed to said valuation committee in support of the work in question.

SALARIES OF THE OFFICIAL FORCE

The salaries paid to the official force of the Railroad and Public Service Commission are as follows:

	<i>Per annum</i>
Chairman	\$5,000.00
First Associate Commissioner	4,000.00
Second Associate Commissioner	2,500.00
Secretary and Rate Expert	3,000.00
Chief Engineer	2,500.00
Assistant Secretary	1,620.00
Statistician and Stenographer	1,500.00
Stenographer	1,500.00

The Chairman and First Associate Commissioner devote all of their time to the work, whereas the law provides that the Second Associate Commissioner may devote a portion of his time to other business.

Considering the value of the service to the public and the character of the service rendered, these salaries are very moderate. In fact, the work has been carried forward with economy when compared with the cost of service of similar importance in other lines of endeavor.

EXPENDITURES OF OTHER STATE COMMISSIONS IN SALARIES

In this connection, it may be said that California employs five railroad and public service commissioners at annual salaries of \$8,000 each, and the following official force:

	<i>Per annum</i>
1 general secretary at a salary of	\$4,500.00
1 attorney	5,000.00
1 assistant secretary	2,700.00
1 chief engineer	5,000.00
1 hydraulic engineer	3,600.00
1 electrical engineer	3,300.00

10 assistant engineers	each	\$1,800.00
1 rate expert		4,200.00
1 assistant rate expert		2,400.00
4 rate clerks	each	1,800.00
1 chief auditor		5,000.00
1 assistant auditor		2,700.00
5 statisticians	each	1,800.00
2 official reporters	each	4,200.00
20 stenographers	each	1,200.00

There are also examiners, inspectors and other assistants which bring the total number of employees of the California Commission to something more than one hundred.

It may also be added that New York has two railroad and public service commissions of five members each—one located in New York City and the other in Albany. These commissioners are paid annual salaries of \$15,000 each.

NEVADA COMMISSIONERS COMPETE WITH HIGH-SALARIED OFFICIALS

Further, it may be said that in the conduct of cases before the Interstate Commerce Commission, the United States Railroad Administration and Congress, the Nevada Commissioners are brought into competition with railroad and corporation representatives drawing salaries ranging from \$7,500 to \$25,000 per annum, who are aided by high-class engineers, superintendents, rate experts, clerks, auditors and statisticians.

ECONOMICAL AND EFFICIENT ADMINISTRATION OF COMMISSION

While, of course, California is a larger State than Nevada, the foregoing statement of officers, employees and salaries serves to show, considering the results accomplished, how we have consolidated the work and how economically it has been carried forward in the matter of both expert assistance and salaries. The foregoing references also serve to show that the far-reaching results secured by the Nevada Commission have been made possible only because the members of the Commission and its Secretary have from the first been well versed in the branches with which we were dealing and because they have applied themselves assiduously. In fact, they have done practically all of the work themselves, instead of having a varied number of assistants and experts to aid them in the preparation of cases, as is the case in many other States and in all industrial organizations dealing with work of similar magnitude and importance.

HEARINGS ON LONG-AND-SHORT-HAUL LEGISLATION BEFORE THE NEWLANDS COMMITTEE AND THE SENATE AND HOUSE COMMITTEES ON INTERSTATE COMMERCE.

During the past two years, the Chairman and the First Associate Commissioner of the Nevada Railroad Commission, associated with Railroad Commissioners and representatives of chambers of commerce and commercial clubs throughout the Intermountain States and sections of the Pacific Coast States, appeared in Washington before the Interstate Commerce Commission in April, 1917; before a special Congressional

investigating committee known as the Newlands Committee at San Francisco during November; and at Washington during December, 1917; and before the Senate and House Committees on Interstate Commerce during March, 1918.

These appearances were made for the purpose of securing the elimination of long-and-short-haul discrimination in west-bound trans-continental rates from eastern defined points to Nevada and all intermountain main-line points in the intermountain rate case, which has been before the Interstate Commerce Commission for so many years, and for the purpose of inducing Congress to pass an absolute long-and-short-haul amendment to the Act to regulate commerce, whereby, for the future, railroads shall be prevented from making a greater charge for a shorter haul than for longer transportation service when such service is over the same line and in the same direction.

Following the hearing and argument before the Interstate Commerce Commission in April, 1917, the Federal Commission, after finding that there was not then any effective or forceful water competition upon which it had theretofore relied for justification in permitting long-and-short-haul discrimination against Nevada and other intermountain points, issued an order effective June 30, 1917, by which the fourth section of the Act to regulate commerce was to be literally enforced and all long-and-short-haul discrimination to be removed; in other words, it was ordered that no greater charge should be made to intermountain short-haul main-line points than to the longer-haul Pacific Coast terminal points.

DECISION QUALIFIED AND RELIEF NOT PERMANENT

In taking this action, however, the order was qualified by the following statement on the part of the Interstate Commerce Commission:

When the water competition again becomes sufficiently controlling in the judgment of the carriers to necessitate the reduction of the rates to the coast cities to a lower level than can reasonably be applied at intermediate points, the carriers may bring the matter to our attention for such relief as the circumstances may justify.

As this order merely required the removal of the discrimination without regard to the manner in which it should be removed or the reasonableness of the rates, the railroads filed tariffs which provided that the discrimination should be removed in part by increasing the rates at the Pacific Coast terminals to the level of the higher intermediate rates in Nevada and other interior States, and, in part, by reducing certain of said intermediate rates to the level of the Pacific Coast terminal rates. At or about this time, Congress amended the fifteenth section of the Act to regulate commerce to provide "that no increased rates shall for the future be filed by the railroads without first securing the consent of the Interstate Commerce Commission," and there was, therefore, raised for the consideration of the Interstate Commerce Commission the investigation of said increased rates proposed by the railroads for the removal of the discrimination in the intermountain rate case.

NEVADA AND OTHER STATE COMMISSIONERS AND REPRESENTATIVES SECURE ACTION BY APPEARANCE BEFORE NEWLANDS COMMITTEE

Pending such investigation, therefore, the order in question was indefinitely postponed and, notwithstanding that there had been no water competition since 1915, because of slides in the Panama Canal and the European war, it was not until after the Railroad Commissioners and chamber of commerce representatives of the Intermountain States had appeared before the Newlands Committee and made a vigorous protest against the unreasonable delay in securing the removal of said discrimination that we finally, on January 21, 1918, secured an order from the Interstate Commerce Commission, effective on March 25, 1918. This order removed the discrimination by authorizing the railroads to, in large part, increase the rates to the Pacific Coast terminals to the higher level of the shorter-haul rates in Nevada and other Intermountain States.

REASONABLENESS OF RATES NOT PASSED UPON

While the discrimination was thus removed and we now have main-line rates equally as good as those named to farther distant Pacific Coast terminals, and very substantially lower than those in effect originally, the order resulted in denying to the intermediate points the reduction in rates which they had sought, by contending and proving that the former Pacific Coast terminal rates, if applied at the intermediate shorter-haul points would be amply compensatory for the services rendered when the lesser service was considered.

IN RE GRADED RATES

Since that time, however (during July, 1918), the associated representatives of the Intermountain States appeared before the appropriate committees of the Railroad Administration and made a strong case in behalf of the establishment of graded rates on west-bound trans-continental traffic to the shorter-haul intermountain points; in other words, it was urged that all intermediate territory be given rates in proportion to the length of the haul, or a lower rate than to the Pacific Coast points, the exact converse of the old, discriminatory long-and-short-haul system of rates.

Exemplified, this means that, whereas a rate from Chicago to San Francisco might be \$1 per 100 pounds, the graded rate to Nevada main-line points would be approximately 85 cents.

We have the promise of Director-General McAdoo, in response to our petition and showing, that such graded rates will be made effective, and we are informed that the various regional committees are working diligently with this end in view. From information at hand, it appears that if the recommendation of said rate committees is adopted by the Railroad Administration, it will, while providing for said gradation, establish rates throughout Nevada, Arizona and eastern Oregon and Washington zone averaging about 18 per cent higher than the rates in effect prior to June 25, 1918, when by order No. 28 the Railroad Administration increased the rates 25 per cent for war-emergency purposes.

RAILROADS INVITED TO REESTABLISH LONG-AND-SHORT-HAUL RATES

As a result of the delays and the qualification in said opinion and order of June 30, 1917, by the Interstate Commerce Commission, which did not insure permanency, and in fact invited the railroads to reestablish long-and-short-haul rates when, in their judgment, the conditions warranted, the Nevada Railroad Commission, the Reno Commercial Club and associated commercial clubs throughout the State, also the Railway Commissions, chambers of commerce, commercial clubs and traffic bureaus throughout all of the Intermountain States, were greatly disappointed. In the face of the announcement of such a governmental policy the cause of our people could not be safely rested, for the reason that there was no certainty or security upon which industrial investments might be made within intermediate territory. It was, therefore, decided to appeal to Congress for the passage of an absolute long-and-short-haul law which would forever prevent the railway traffic managers and the Interstate Commerce Commission from establishing long-and-short-haul rates for the future. Appearances were then made before the Newlands Committee at San Francisco during November, 1917, and at Washington during December, 1917, and January, 1918. This committee is composed of five members from the Senate and five from the House and is created for the purpose of investigating the railway question in general and reporting its conclusions to Congress, which, due to pressure of war legislation, it has thus far been unable to do. Thereafter long-and-short-haul bills were introduced in Congress and during March, 1918, hearings were held thereon before the Senate and House Committees on Interstate Commerce at Washington, D. C.

At these hearings a strong showing was made by the associated representatives of the Intermountain States in support of the passage of an absolute long-and-short-haul amendment. Those interested in the question are respectfully invited to write to our Senators and Representative in Congress for copies of the reports covering the Newlands Committee hearing and also the hearings on the long-and-short-haul bills before the Senate and House Committees on Interstate Commerce.

Briefly stated, the issues upon which the Intermountain States were in unanimous agreement and the facts forming the basis upon which the evidence was presented for said Congressional committees are made entirely clear by reference to Nevada Senate Joint and Concurrent Resolution No. 10, passed by the State Legislature March 13, 1917. See reports of hearings before Newlands Committee and before Senate and House Committees on Interstate Commerce.

SHOWING BY THE INTERMEDIATE RATE ASSOCIATION BEFORE THE SENATE AND HOUSE COMMITTEES

Following the Newlands hearing the State Railroad Commissions, commercial and shipping clubs and traffic associations of Intermountain and Pacific Coast States organized the Intermediate Rate Association and, after electing Commissioner Shaughnessy president of the association, opened headquarters at Washington, D. C. The headquarters of the association were maintained and the work carried on from the capital by Commissioner Shaughnessy until September 25, 1918, when, following the death of Chairman H. F. Bartine, he returned to Nevada.

OBJECT OF THE ASSOCIATION

The object of the association is to more fully coordinate the efforts of the respective States and to bring to the support of the long-and-short-haul legislation in question the Southern States which, for many years, have suffered the same character of discrimination that has been imposed against the Intermountain States. This object is being rapidly accomplished. Many sections of the Southern States are now members of the association and are actively and energetically carrying on a campaign of education and petitioning their representatives in Congress to support the passage of said long-and-short-haul legislation.

APPEARANCES ENTERED

Upon hearing of the bills before the Senate and House Committees beginning March 13, and running continuously until and including March 31, 1918, the association was enabled to enter the appearances of thirty different organizations representing as many different sections of Southern and Western States.

The parties of record are as follows:

Joseph L. Bristow, former Panama Canal Commissioner and United States Senator from Kansas; H. F. Bartine and J. F. Shaughnessy, for the Nevada Railroad Commission, the Reno Commercial Club and other associated Nevada clubs; F. A. Jones, for the Arizona Railroad Commission; Hugh H. Williams, for the Railroad Commission of New Mexico; Alison Mayfield, for the Railroad Commission of Texas; A. L. Freehafer and Leonard Way, for the Public Utilities Commission of Idaho; James Galceran, secretary of the Railroad Commission of Mississippi; H. H. Corey, for the Railroad Commission of Oregon; Carl S. Motte, Secretary of the Public Service Commission of Indiana; O. P. Gothlin, formerly President of the National Association of Railway Commissioners; Daniel Boyle, for the Railroad Commission of Montana; John G. Richards, for the Railroad Commission of South Carolina; Frank Lyon, attorney for the Luckenbach Steamship Company; W. S. McCarthy, for the Traffic Bureau of Utah and the Railroad Commission of Utah; J. B. Campbell and J. A. Ford, for the Spokane Chamber of Commerce; W. R. McIntosh, for the Chamber of Commerce of Monterey, Cal.; H. H. Howard and J. H. Haracer, for the Chamber of Commerce of Bozeman, Mont.; H. G. Pickett and L. H. Ream, for the Commercial Club of Helena, Mont.; R. L. Varney, for the Retail Merchants' Association of Helena, Mont.; A. L. Reeves, for the Merchants' Exchange, of Helena, Mont.; C. C. Taylor and Garland Daniel, for the Chamber of Commerce of Greensboro, N. C.; J. A. T. Slater, for the Chamber of Commerce of Columbia, S. C.; A. J. McGhee, for the Association of Commerce of Jackson, Tenn.; Charles W. Smith, secretary of the Intermediate Rate Association; S. A. Thompson, secretary of the National Rivers and Harbors Congress; John R. Corey, for the Chamber of Commerce of Hastings, Neb.; George B. Graff, for the Boise Commercial Club, Idaho; Ed. P. Byers, for the Freight Traffic Bureau of Fort Worth, Tex.; Hamlin Palmer, for the Commercial Club of Amarillo, Tex.; W. M. Maxwell, for the Chamber of Commerce of Dallas, Tex.; the Chamber of Commerce of Lewiston, Mont., and the Chamber of Commerce of Butte, Mont.

Honorable Joseph L. Bristow, former Panama Canal Commissioner under President Roosevelt, and former United States Senator from

Kansas, appeared upon request of the association, and made a strong showing in support of an absolute long-and-short-haul amendment to the present fourth section of the Act to regulate commerce.

Senators Henderson of Nevada, Poindexter of Washington, and Shafroth of Colorado, and Congressman Hayden of Arizona introduced the desired long-and-short-haul bills in the Senate and the House. These Senators, and also Senators Myers of Montana and Pomerene of Ohio, rendered valuable assistance and encouragement during the Senate Committee hearing, to all representatives of Western and Southern States, who appeared and gave testimony. During the hearings before the House Committee, Judge Sims of Tennessee, the chairman, by his unfailing courtesy, his deep understanding of the railroad question, his ready grasp of the points presented and his ability to concisely and effectively elucidate obscure points by cross-examination, won for himself the respect and commendation of all who appeared at the hearings.

An exceedingly strong case in support of the remedial legislation desired was made before said committees and the matter is now submitted for consideration, with good prospects of an early passage of the legislation in question.

In addition to voluminous rate examples and rate analyses, which were introduced as showing the grave and unwarranted injustice under which Western and Southern States have so long suffered and which was not successfully controverted by the representatives of the railways and the corporation and jobbing representatives of the large industrial and waterway cities, who appeared on behalf of the railways at said hearings, the following pleadings and historical side of the question were presented by the Intermediate Rate Association:

HISTORY OF LONG-AND-SHORT-HAUL REGULATION

It was shown that, as far back as 1887, when Congress, following the lead of some of the more progressive States which had established Railroad Commissions, passed the original Act to regulate commerce, whereunder the Interstate Commerce Commission was created and empowered, effort was made to establish a wise and just governmental policy by providing, in section four of the Act, that no greater charge should be made for a shorter than for a longer haul when rendered under substantially similar circumstances and conditions. For approximately two years thereafter, the railroads filed tariffs in conformity with the absolute long-and-short-haul rule, but later, tariffs were filed reestablishing long-and-short-haul rates again and, because of the qualifying language in said section regarding "dissimilarity of circumstances and conditions," the Federal Courts held that the carriers might violate the long-and-short-haul rule. Therefore, under the original section, where circumstances and conditions could be shown to be dissimilar, the right to initiate and name discriminatory rates was placed within the discretion of the railroads.

FOURTH SECTION AMENDED IN 1910

That, thereafter, these violations continued unrestrained, very much as if no law had ever been passed by Congress, until 1910, at which time the fourth section was amended by reaffirming the long-and-short-haul rule, but it was again qualified by giving to the Interstate Com-

merce Commission jurisdiction in exceptional or "special cases" to authorize the carriers to depart from the absolute provision of said rule.

That the major portion of the long-and-short-haul discriminatory rates were found in Southern and Western States; that in due time the carriers filed thousands of applications for exemptions from the amended section, and, therefore, all existing long-and-short-haul rates remained as they were, pending investigation and determination by the Commission; and that said railroad applications for authority to continue the violation of said absolute rule as amended were consolidated and decided under what are known as the Southeastern Cases, 30 I. C. C. 153 (1914) and the Intermountain Rate Cases, 21 I. C. C. 329, 234 U. S. 476 (1914). Both of these cases were finally passed upon by the Commission and the courts during the year 1914, or approximately four years after the passage of the amended fourth section in 1910. As a result of this action, some short-haul rates higher than the longer-haul rates were corrected; some were modified and some were not touched at all, and, therefore, the entire rate fabric throughout these great inland territories at this time is honeycombed with artificial fourth-section violations. But, as above shown, the decisions have been so qualified that there has come no certainty or permanency in the relief contemplated by Congress when it amended said section in 1910.

DECLARATION OF CONGRESS NECESSARY TO ESTABLISH CONFIDENCE, ENCOURAGE NEW INVESTMENTS AND PREVENT CONFISCATION.

It was further shown that, notwithstanding the legislative intent to make said amended long-and-short-haul provision practically absolute, the proviso, or exception, in said section has become the general rule in the administration of the law; that action by the Interstate Commerce Commission has been exceedingly slow, expensive and unsatisfactory, because decisions contained qualifying language, and, therefore, that character of permanency and security upon which local and outside capital may be solicited in competition with large industrial and commercial centers for new industrial enterprises throughout intermediate sections is not afforded, from which it follows that the development of the Western and Southern States and their growth in population and wealth are seriously retarded; that, in this behalf, even though the discrimination complained of may be removed by the Interstate Commerce Commission or by rates graded in proportion to distance, as promised by the Director-General of Railroads during the period of federal control and operation, the same apprehension and uncertainty will exist in the minds of investors because said federal control is limited by law, and upon a return to private operation the railways will doubtless quickly confiscate any new industrial investments made at intermediate points by reestablishing the former long-and-short-haul rates in the interest of long-, double- and treble-haul transportation, which they have for sale and are interested in disposing of; and that, therefore, a declaration by Congress making the section absolute, in order to remove said abuse of administrative discretion, is vitally necessary.

INDUSTRIAL INTERESTS ARRAYED ON SIDE OF RAILROADS AND AGAINST INTERMEDIATE PRODUCING STATES

It was further shown that the great intermediate and producing territory of the United States, although numerically superior in voting population to the preferentially favored industrial and commercial centers, lacks organization, whereas, on the other hand, the large industrial and commercial interests have always been, and are today, strongly organized and, heretofore, have been closely affiliated with the railroads in promoting their own growth and prosperity; and also, incidentally, that of the railroads, by promoting long- and double-haul business, all of which has been largely at the expense of the great interior and producing districts.

That, heretofore, when the Western and Southern States have appeared before the Interstate Commerce Commission in sectional groups, asking for the enforcement of the absolute rule, they have found arrayed against them and on the side of the railroads, strong industrial attorneys and representatives from railroad rate-favored sections opposing the relief they sought, and strenuously contending that the "proviso" of said section should be made effective to the exclusion of the absolute rule; and that, when Congress is appealed to, as in the present instance, from administrative long-and-short-haul decisions under which they enjoy preferential rates at the expense of the country at large, danger signals are displayed indicating that the remedial legislation in question, if granted, may encourage the bringing of numerous rate questions before Congress for initial action, and therefore, as a substitute, proposal is made "that Congress indicate only a general policy, and that broad powers be granted to the Interstate Commerce Commission in order that all questions may be determined upon their merits, etc."

That this was attempted by Congress in 1887 and again in 1910, but these interests failed to make good their pretensions and if, as they now claim, the Act to regulate commerce needs strengthening, they were never heard to initially raise or support a movement therefor before Congress, in behalf of the public, for the general good of all. On the contrary, they have opposed as long as they could any such movements, and the reason therefor is not difficult of ascertainment.

In this behalf, it was shown that the large industrial interests of the country are interested in maintaining the present railroad-rate system for the reason that they are more largely concerned in retaining the rates covering their own particular lines of traffic established very largely by agreement with the railroads, and, therefore, not by the national rate-making tribunal about which they are evidencing such deep concern at the present time—than they are in working out a system of reasonable and nondiscriminatory rates for the public.

FAILURE TO TAKE ADVANTAGE OF GOD-GIVEN OPPORTUNITIES

These interests also strongly contended that, because of water-compelled (?) rates, industry, capital and population have been centralized at the established centers which they represent; that the channels of trade have thus become established and should not be disturbed; that, because of the strategical location of these industrial and commercial centers on navigable water, either inland or ocean, they have

a "God-given" and, therefore, a "vested right" in a lower scale of rates than is granted to intermediate- and producing-point territory; and that they are entitled to the benefits that they might have secured by the development and effective utilization of the Nation's natural waterways, but which they have not taken advantage of, yet, because of the potentiality of their location on these waterways, upon which the Nation at large has expended, as of July 1, 1916, \$898,500,000 on rivers and harbors, and \$450,000,000 on the construction of the Panama Canal. In aid of the development of waterway transportation by private capital, these great industrial and commercial interests contend that there should be accorded the benefit of preferential all-rail rates; and that in spite of the low water rates and dependable service which they might have enjoyed if advantage had been taken of their "God-given opportunities," and they had participated in developing, patronizing and making waterway transportation an effective and efficient instrumentality.

WISE NATIONAL DEVELOPMENT POLICY DEMANDS THAT GOVERNMENT PROTECT UNORGANIZED PRODUCING SECTIONS AGAINST EXPLOITATION

It was further shown that, as a matter of wise and beneficial national policy, the intermediate States may more properly contend, and with much better grace make the argument for these all-rail preferential rates than the large industrial and commercial centers, on the ground that such rates are necessary to equalize the natural advantages of the latter, which can be and, in some cases are, afforded by waterway transportation from and to all the markets of the world, and thus insure more uniform development of the Nation's resources by promoting an equitable distribution of industry, population and wealth.

WATER TRANSPORTATION FACILITIES NOT AVAILABLE WHEN URGENTLY NEEDED FOR WAR PURPOSES

It was further shown that, in the face of the world-wide war, the Government found that much needed water transportation, both inland and ocean, was lacking, and largely only something to talk about, and that adequate facilities therefor were not in existence when vitally needed to relieve the congestion incident to the war; that in this connection, as it is now the announced policy of the Nation to protect and promote the building up of waterway transportation, it was urged that one of the first and most necessary steps in this direction is the passage of an absolute long-and-short-haul law; and that, otherwise, there can be no real or thorough-going security, in fact, not even reasonable security against radical changes in rates to meet water or rail competition and, therefore, the enormous sums of money necessary for the promotion and the building of modern and efficient waterway transportation lines cannot be secured from private investors.

LONG-AND-SHORT-HAUL LEGISLATION WILL PROTECT WATER TRANSPORTATION

It was further shown that Congress must provide for a safe and honest national policy, whereby waterway transportation and industrial enterprises for intermediate-point territory may be assured of reasonable national consideration and protection following the close of

the war, and that they must be protected from almost certain destruction by the expedient of a ruinous railway rate war at the expense of intermediate-point territory; such, for example, as was staged under the present fourth section of the Act to regulate commerce immediately following the opening of the Panama Canal in 1914, when, as shown by the hearings, the rates were reduced to the Pacific Coast and the amount of the rate discrimination against Nevada and other Inter-mountain States increased from 15 to 54 per cent on the basis of Interstate Commerce Commission's former order.

TAXATION AND WATERWAY APPROPRIATIONS WASTED FROM TRANSPORTATION STANDPOINT

It was further shown that the aforesaid expenditures of public money, aggregating over one and one-third billions of dollars, for river and harbor improvements and canal construction, came from taxation of all the people of the Nation; that these appropriations, improvements and betterments are authorized by Congress on petition from waterway cities under the plea of promoting inland and coastwise waterway transportation; that, thereafter, the potentiality of these improved waterways is used in justification of the maintenance of preferential long-and-short-haul railroad rates; that in this behalf representatives of large financial, industrial and commercial enterprises located at the large waterway terminals are satisfied to forego the development and service of water transportation in consideration of the privileges afforded by said preferential railway rates; that, as before indicated, they appear with the railroads before the Interstate Commerce Commission and Congress whenever effort by the intermediate States is made to have these discriminatory rates eliminated, and contend that, under present law and administrative policy, "potential water competition" is sufficient to justify the railways in maintaining said preferential long-and-short-haul rates to said waterway terminals; and, when closely pressed, some of these large industrial representatives contend that, as the railway property investment of the Nation is so great—for example, twelve and one-half billion dollars, if estimated at an appraised valuation of \$50,000 a mile—it should receive superior protection even to the exclusion of the development of waterway transportation on any scale that might adversely affect said railway investments.

In view of these considerations, therefore, the argument that railroad rates are actually controlled by an honest and forceful water competition is, of course, without merit and disingenuous, to say the least.

MONOPOLISTIC TRUSTS FOSTERED AND PROTECTED WITHOUT VIOLATION OF THE SHERMAN ANTITRUST ACT

It was further shown that, under the said water competitive theory, the railways have skilfully praeceled our country into producing zones, on the one hand, and manufacturing zones, on the other, for the purpose of promoting the sale of the maximum volume of transportation. In this behalf, the railways have transportation for sale. It is the commodity in which they deal, and they are, therefore, interested in disposing of as much of it as possible. Manifestly, if the law of the land permits the railways to promote the sale of transportation on a basis which will produce the maximum of long, double and treble hauls,

we must expect them to take full advantage thereof. We must also expect large combinations of capital invested in industrial enterprises to cooperate with the railways in this policy, because, by so doing, automatically results in the most practical scheme of monopoly that may be devised, without at the same time doing violence to the inhibitions of the Sherman Antitrust Act. And, in this behalf, it may be stated that the most stringent form of monopoly of industrial activity, including high prices of manufactured goods to the consumers, is effectuated under the aforesaid policy of federal railroad rate regulation.

MONOPOLY IN RESTRAINT OF TRADE AND STATE DEVELOPMENT

It was further shown that the practical effect of these artificial transportation conditions, created by the large industrial and railway interests and made possible by this uneconomic and unjust policy sanctioned by the Government, causes centralization of population and traffic and subsidizes and legalizes monopoly of trade and industry at said rate-favored water points by compelling the location of industrial enterprises thereat to the exclusion of their location at or near the points of supply; that this, in turn, furnishes an excuse for and, in fact, makes necessary the building and maintenance of large railway terminals at those preferentially rated centers; that the building of such terminals adds enormously to the investment in railroads, and the cost of operation for terminal, storage and switching of traffic and equipment; that expensive switching to private industrial tracks is furnished free of cost to the beneficiaries of the aforesaid preferential rates; that the return upon these large terminal investments and the cost of the free service furnished is included within and made a part of the line-haul rates, from which it follows that, without compensating advantage, the mileage pro rate of this burden is assessed against the already prejudicially rated short-haul intermediate States; that, therefore, the benefits and privileges, when added to the preferential line-haul rates accorded to these terminal points, nourishes and perpetuates said industrial monopoly in restraint of trade and state development throughout the Nation in proportion as the resources and energies of the various States and the people would otherwise justify; that the intermediate sections are compelled to contribute toward the maintenance of this indefensible monopoly by the payment of higher transportation rates and, therefore, higher prices for practically all articles of consumption than would otherwise be necessary if there was a wider distribution of industrial enterprise and, consequently, a more economical distribution of traffic instead of the present wasteful congestion of railway traffic at large terminals, resulting in car shortages and a frightful slowing up of transportation and commerce during certain periods of practically every year; and that, because of the aforesaid disabilities, the intermediate short-haul States lose from community upbuilding and taxation that proportion of the population and industrial property which is rightfully theirs, but which, under the present authorized governmental policy, must be located at said large terminals for the concentration, manufacture, and fabrication of the products from the resources of said intermediate States.

It therefore follows that monopoly levies a heavy tax on the people of these States by requiring them to pay through the medium of heretofore

fore unregulated, trust-fixed prices of commodities and said high and prejudicial freight rates, a sufficient tribute to enable it to enjoy exclusive terminal facilities and to dictate the location of industrial activities. Further, that our public transportation highways, under the plea of an adequate reward for *the unregulated expenditures of private capital* invested in costly and extravagant standards of track and equipment, and the alleged necessity of meeting water, market and rail competition in the past, have been used under governmental sanction to create the monopolistic conditions herein complained of and entirely too little attention has been given to state welfare and development. The paramount consideration has been the question of railway development and prosperity, and because of it the people of the far Western and Southern States have paid a heavy tribute for long and double hauls on those products which would bear such charges. These tributes are increasing and the consideration for the sovereignty and welfare of the various States is growing markedly less among the railway, the industrial and the large banking interests on Wall Street.

SAN FRANCISCO AND OTHER PORT CITIES IN THE ROLE OF JOBBING OR CLEARING-HOUSES FOR THE RAILROADS AND LARGE INDUSTRIAL MONOPOLIES

It was further shown that the aforesaid conditions are the result of long-established railroad, industrial and commercial practices, and that under the practical working of the system, protection and prosperity are afforded to certain favored cities, which, because of their "regional" location at great railway terminals and inland and ocean waterway ports, have been selected, to the exclusion of other cities on the Atlantic and Pacific Coasts having equal waterway possibilities, to act as commercial centers; in other words, to act as the clearing-houses or jobbers for the railroads and the large eastern industrial trusts.

In this connection, it was shown that practically no effort has, prior to the war, been made by San Francisco and other great Pacific and Gulf ports, to establish manufacturing enterprises and serve the great western and southern empires tributary thereto, and the rapidly growing South American and Asiatic trade; that, on the contrary, they have been content, largely, to act as clearing-houses for the railroads and the large eastern manufacturers because, under the operation of long-and-short-haul rates, they have been given control of the jobbing business throughout vast areas of the shorter-haul intermediate sections. In other words, by long-haul preferential rates and special back-haul distributing rates, they have been enabled to warehouse western and southern products, but of eastern manufacture, after railway hauls across the entire continent and back, averaging from 4,000 to 6,000 miles, and thereafter to job, or backhaul, them into the intermediate points of production throughout the great Pacific Coast, Intermountain and Southern States.

MONOPOLISTIC SYSTEM ILLUSTRATED BY THE DISABILITY UNDER WHICH NEVADA LABORS

In this behalf, under prewar, or normal, conditions, the advantages which San Francisco enjoys, and the disabilities under which Nevada labors may be used to illustrate the practical working of the method

by which industry is controlled and transportation is sold. From the producer to the consumer, there is added to the cost of copper wire for combined railway charges to and from New Jersey manufacturing points, at Ely, Nevada, where the raw copper is produced, respectively, \$47.20 per ton, or \$1,416 for a thirty-ton carload; whereas the jobber at San Francisco purchases copper wire through the same source and is required to pay a combined railway charge for a five-hundred-mile longer haul of only \$29 per ton, or \$870 for said carload; in other words, a differential of \$546 per car in favor of San Francisco.

On the other hand, the small dealers or consumers at Ely, Nevada, because of the rate structure, must purchase their ton or less-than-carload lots of copper wire from the San Francisco jobber at combined railway charges covering three transportation hauls amounting to \$62.20 per ton. This effect is produced because if they purchased directly from the New Jersey manufacturers, the combined railway charges would be \$65 per ton and, therefore, San Francisco is made the purchasing market and built up at the expense of and to the exclusion of intermediate producing territory.

In this connection, San Francisco and other Pacific Coast and Gulf ports have, *to the exclusion of intermediate sections, an exceedingly wide range of railroad distributing rates*, population, waterway facilities, and the wealth by which they could, if desired, establish diversified manufacturing, and thereby furnish nearby markets for the products of the soil, the mines and the forests, and as a consequence very greatly reduce the costs to the consumers by a saving in wasteful and unnecessary transportation.

Within the combined railway charges heretofore shown, of \$62 for ton-lot shipments to the consumers at Ely, under normal conditions and of \$87.50 under the present war-emergency 25-per-cent increase in rates, there should be ample leeway in which to complete the manufacture of copper articles at San Francisco and, at the same time, save to the consumers of Nevada and other intermediate territory from \$20 to \$40 per ton in the cost of copper wire. But, as stated before, these large terminals have been and are satisfied to remain in the role of resident selling agents for the railroads and the eastern industrial monopolies.

Again, it may be suggested that there is no good reason why the manufacture of these articles could not be completed at or near the points where they are smelted in Nevada and other mining States, thus furnishing for shipment to the East the manufactured copper articles instead of copper matte, as at present, and at the same time save to the local consumers the cost of said wasteful and unnecessary long-, double- and treble-haul transportation. But the present industrial arrangement affords business for the railroads and as the copper-smelting combine is made up of outside capital in which the people of the mining States have no voice, and as the consumer must, in the last analysis, pay the bill anyway, the policy of centralizing all industrial activity throughout the East, to the exclusion of the western and southern producing sections of the country, goes merrily on.

UNJUST TAXATION IMPOSED IN VIOLATION OF EQUALITY CLAUSE OF CONSTITUTION

That the railroad discrimination under which the intermediate sections labor has been greatly intensified by the aforesaid 25-per-cent

horizontal increase in rates made by the Government, is emphasized by its effect on the charges covering the movement of said Ely copper products. For example, the said \$29 combined railroad charge to San Francisco was, under authorization of the Interstate Commerce Commission, increased to \$34 per ton on March 25, 1918, and therefore, when said 25-per-cent increase was applied on June 25, a war-emergency contribution of only \$8.50 per ton was taken from the San Francisco jobbers and consumers, whereas the Ely consumers were required to pay a contribution of \$11.80 per ton in carload quantities and of \$15.55 in less-than-carload quantities. Likewise, the vice of the present governmental policy is further intensified and emphasized by the application of the 3-per-cent war-emergency tax levied upon all freight charges, and from which it will be found that, by its application, the San Francisco jobbers and consumers are taxed only \$1.27 per ton on the aforesaid railroad charges paid on their copper wire, whereas the consumers of Ely and other intermediate points similarly located are required to pay a tax of \$2.40 per ton. Therefore, the Government is, by its own authorized policy, gathering taxes in an unjust and unequal manner in violation of the equality clauses of the Constitution.

THE MONTANA SUGAR-RATE CASE

The working of the system may be further illustrated by referring briefly to the decision of the Interstate Commerce Commission in the case of the *Butte Wholesale Grocery Co., et al. v. Butte, Anaconda and Pacific Railway Co., et al.*, decided February 11, 1918, which covers the movement of sugar from the California terminals over the circuitous routes through Montana and the Dakotas to St. Paul, where it meets the direct or short-line rate of 55 cents per hundred or \$11 per ton, whereas the rate at the intermediate Montana points is 85 cents per hundred, or \$17 per ton. The short-line route from San Francisco through Ogden and Omaha to St. Paul is 2,150 miles, while the average distance over the circuitous northern lines is approximately 2,600 miles, or 21 per cent in excess of the short-line distance. On the other hand, the average distance from San Francisco to all Montana points is but 1,400 miles, and upon complaint and investigation covering the reasonableness of the \$17 Montana rate, as well as its discriminatory features when compared with the \$11 St. Paul rate, the Commission, on February 11, 1918, dismissed the proceeding and validated the carriers' practice of assessing the rates in this manner.

Upon any basis of progression, if \$17 per ton, or \$510 per car, for a 30-ton load is a just and reasonable rate for the movement of sugar to these Montana points, for an average distance of 1,400 miles, then it must fairly be assumed that for the 2,600-mile haul to St. Paul the normal rate should be not less than \$25 per ton or \$750 per car. The reasonableness of the rate, however, may be found by testing the cost of moving this traffic upon some fair basis. If we apply the "trans-state" trainload cost of 2.74 mills per ton per mile, which is analyzed hereinafter, the cost of moving this sugar for the 2,600 miles to St. Paul is \$7.12 per ton, whereas for the 1,400-mile haul to Montana points it would be \$3.86 per ton; or, even if we estimate the cost of the Montana service to be as much as 5 mills per ton per mile, we still find the cost is only \$7 per ton. Therefore, the application of the St. Paul rate of

\$11 per ton, or \$330 per car, to the Montana points would be highly compensatory.

While the Commission found that this \$17 rate, blanketed for a distance of 408 miles through Montana, was not excessive or unreasonable yet on the question of the reasonableness of the rate they convict themselves, for when the Dakotas are reached the rate decreases proportionately as the distance increases in the approach to St. Paul, where the \$11 rate is met. In other words, the rates to these longer-haul intermediate points in the Dakotas and Minnesota are constructed upon the basis of the \$11 rate to St. Paul, plus the local rate back, and this produces a rate at Fargo, N. D., for example, of \$15 and of \$12.60 at Aberdeen, S. D.; as compared with the \$17 rate at said shorter-haul Montana points.

THE INSIDIOUS RAILROAD SLOGAN

The railroads stand on the insidious slogan that, if they raise the rates at the Pacific Coast and other water ports, they will lose a large amount of business because the steamship lines will get it; that this will cause a reduction in their income returns and therefore justify higher rates at the shorter-haul interior points in order to pay return on their properties. But this would have the highly beneficial effect of equalizing the rates throughout the country and would place all communities upon an absolute equality; in other words, it would enable the intermediate sections to manufacture in competition with the eastern industrial sections, and even though there might not be any ultimate reduction in freight rates, or even if there were some increase therein, we would have obtained the highest advantage because of community betterment and prosperity which would then result from the establishment of manufacturing and the spending of our own money at home, instead of allowing it to go to the far eastern industrial centers as in the past and as at present. Such industrial development and activity would greatly increase our population, wealth and taxable property from the money which is now going outside the State to enrich and build up the railroads and the rate-favored industrial centers of the Far East. This is a complete answer to the railroad bugaboo, which is always held up to frighten the people at the prejudicially rated intermediate points, "that their rates would be increased unless the railroads are permitted to continue carrying goods on through their territory to the preferentially rate-favored industrial and commercial centers, at less than fully compensatory rates, etc." It does not follow at all, under the adjudicated principles long established by the United States Supreme Court, that the railroads will be permitted to cast the burden of that portion of the property which is used in performing the transportation of traffic which ultimately may be lost or taken away by other transportation agencies. This principle is so elementary and self-evident that it needs no elucidation.

Supplementing what has been said hereinbefore regarding the insecurity afforded and the vice of the present governmental policy, attention is directed to the last paragraph of the fourth section of the Act to regulate commerce, which provides that said preferential rates to favored regional water points, when once established to meet water competition, shall be maintained and that the burden thereof shall

on the prejudicially rated intermediate sections. The paragraphs as follows:

Whenever a carrier by railroad shall in competition with a better route or routes reduce the rates on the carriage of any species of freight to or from competitive points, it shall not be permitted to increase such rates unless after hearing by the Interstate Commerce Commission it shall be found that such proposed increase rests upon changed conditions other than the elimination of water competition.

LONG-AND-SHORT-HAUL RATES AND UNJUST TAXATION EXEMPLIFIED

Amplifying the character of the long-and-short-haul discrimination complained of, and the far-reaching territorial effect of this differential policy, and how it operates preferentially in favor of terminal points and prejudicially against the producing sections throughout the country, including how the Government requires the latter sections to pay the prejudicially high rates and, at the same time, bears an unconscionable discrimination in their tax contributions in benefit of the aforesaid privileged class at said preferentially treated terminals, there is set forth in the following tables a comprehensive analysis of said charges and taxes.

PICTURE OF A FEW RAILROAD RATES AND THEIR EFFECT, AUTHORIZED UNDER PRESENT GOVERNMENTAL POLICY

Notes for Rate-Discrimination Tables

- 1—Mileage to Virginia cities is based on average distances from point of origin shown, to Norfolk, Richmond, Roanoke and Lynchburg.
- 2—Rate also applies from other North Pacific Coast points.
- 3—Average mileage from Reno, Minden, Lovelock, and Elko.
- 4—Mileage from Portland, Oreg., via Sacramento, Cal., and El Paso, Tex., to Memphis, Tenn.
- 5—Average mileage from San Francisco, Sacramento, Stockton and Fresno, Cal., to New Orleans, La.
- 6—Short-line mileage to central Texas points, mileage from Portland, Oreg., to Waco, Tex., used.
- 7—Mileage from Nevada points to Boston, Mass., represented by mileage from Beowawe, Nevada, to Boston, Mass.
- 8—Average mileage from San Francisco, Cal., to Great Falls, Missoula, Bozeman, Helena, Livingston, and Lewiston, Mont.
- 9—Mileage via St. Louis, Mo., and Missouri Pacific System to destination.
- 10—Mileage via Missouri Pacific System and Texas Pacific Railroad.
- 11—Mileage via Illinois Central Railroad.
- 12—Mileage via City of Memphis, Tenn., and Southern Railway.

First-Class Rate Discrimination

Item	From—	To—	Long-and-short-haul mileage	Railroad charges per ton, prior to June 25, 1918	Unequal contribution per ton levied by the Government's 25% increase in freight rates, June 25, 1918	Total or present railroad charges per ton, including 25% increase	Total or present railroad charges per car, including 25% increase, 15-ton carload	Unjust application of Government's 8% war tax, amount levied per carload
First-class rate.	New York, N. Y. New York, N. Y. New York, N. Y. New York, N. Y.	New Orleans, La. Jackson, Miss. Wilona, Miss. Westpoint, Miss.	1,372 1,238 1,180 1,072	\$24.60 28.60	\$6.15 7.15	\$30.75 35.75	\$461.25 536.25	\$13.84 16.09
Extent of discrimination.				\$4.00	\$1.00	\$5.00	\$75.00	\$2.25
First-class rate.	New York, N. Y. New York, N. Y.	Savannah, Ga. Asheville, N. C.	845 705	\$16.80 23.80	\$4.20 5.95	\$21.00 29.75	\$315.00 446.25	\$9.45 13.39
Extent of discrimination.				\$7.00	\$1.75	\$8.75	\$131.25	\$3.94
First-class rate.	New York, N. Y. New York, N. Y. New York, N. Y.	Memphis, Tenn. Grand Jct., Tenn. Corinth, Miss.	1,157 1,106 1,066	\$21.80 28.60	\$5.45 7.15	\$27.25 35.75	\$408.75 536.25	\$12.26 16.09
Extent of discrimination.				\$6.80	\$1.70	\$8.50	\$127.50	\$3.83

Extent of discrimination.....	New York, N. Y. New York, N. Y.	Memphis, Tenn. Knoxville, Tenn.	1,157 798	\$0.80 \$21.80 24.00	5.55 80.10 25.45 6.00	27.65	414.75	\$12.30 13.44
First-class rate.....						\$0.40 \$27.25 30.00	\$6.00 \$408.75 460.00	\$0.18 \$12.25 13.50
Extent of discrimination.....	New York, N. Y. New York, N. Y. New York, N. Y. New York, N. Y.	Memphis, Tenn. Hartman Jct., Tenn. Chattanooga, Tenn. Sheffield, Ala.	1,157 798 847 1,014	\$2.20 \$21.80 25.20	\$0.55 25.45 6.30	\$2.75 \$27.25 31.50	\$41.25 \$408.75 472.50	\$1.24 \$12.25 14.18
Extent of discrimination.....	New York, N. Y. New York, N. Y. New York, N. Y.	New Orleans, La. Meridian, Miss. Hattiesburg, Miss.	1,372 1,123 1,223	\$3.40 \$24.60 26.80	\$0.55 26.15 6.70	\$4.25 \$30.75 33.50	\$63.75 \$461.25 502.50	\$1.92 \$13.84 15.08
Extent of discrimination.....	New York, N. Y. New York, N. Y. New York, N. Y.	New Orleans, La. Birmingham, Ala. Montgomery, Ala.	1,372 890 1,061	\$2.20 \$24.60 26.20	\$0.55 26.15 6.55	\$2.75 \$30.75 32.75	\$41.25 \$461.25 491.25	\$1.24 \$13.84 14.74
Extent of discrimination.....	New York, N. Y. New York, N. Y. New York, N. Y.	New Orleans, La. Seneca, S. C. Spartanburg, La.	1,372 798 683	\$1.60 \$24.60 25.30	\$0.40 26.15 6.35	\$2.00 \$30.75 31.65	\$30.00 \$461.25 474.75	\$0.80 \$13.84 14.24
Extent of discrimination.....	New York, N. Y. New York, N. Y.	Savannah, Ga. Columbia, S. C.	845 703	\$0.70 \$16.80 21.80	\$0.20 24.20 5.40	\$0.90 \$21.00 27.00	\$13.50 \$315.00 405.00	\$0.40 \$9.45 12.15
Extent of discrimination.....	New York, N. Y. New York, N. Y. New York, N. Y.	Savannah, Ga. Charlotte, N. C. Salsbury, N. C.	845 608 563	\$4.80 \$16.80 20.60	\$1.20 24.20 5.15	\$6.00 \$21.00 25.75	\$80.00 \$315.00 386.25	\$2.70 \$9.45 11.59
Extent of discrimination.....	Chicago, Ill. Chicago, Ill.	New Orleans, L. A. Roseland, La.	912 883	\$3.80 \$28.00 29.00	\$0.95 25.75 7.00	\$4.75 \$28.75 35.00	\$71.25 \$431.25 525.00	\$2.14 \$12.94 15.75
Extent of discrimination.....				\$5.00	\$1.25	\$6.25	\$98.75	\$2.81

FIRST-CLASS RATE DISCRIMINATION—Continued

Item	From—	To—	Long-and-short-haul mileage	Railroad charges per ton, prior to June 25, 1918	Unequal contribution per ton levied by the Government's 25% increase in freight rates, June 25, 1918	Total or present railroad charges per ton, including 25% increase	Total or present railroad charges per car, including 25% increase, 15-ton carload	Unjust application of Government's 3% war tax amount levied per carload
First-class rate (See Note 10)	St. Louis, Mo. St. Louis, Mo. St. Louis, Mo. St. Louis, Mo.	New Orleans, La. Dallas, Texas. Fort Worth, Texas. Texarkana, Ark.	1,287 708 740 494	\$18.00 25.40	\$4.50 6.35	\$22.50 31.75	\$337.50 476.25	\$10.13 14.29
Extent of discrimination				\$7.40	\$1.85	\$9.25	\$138.75	\$4.16
First-class rate	Kansas City, Mo. Kansas City, Mo. Kansas City, Mo. Kansas City, Mo.	New Orleans, La. Dallas, Texas. Fort Worth, Texas. Texarkana, Ark.	1,049 517 507 487	\$18.00 25.40	\$4.50 6.35	\$22.50 31.75	\$337.50 476.25	\$10.13 14.29
Extent of discrimination				\$7.40	\$1.85	\$9.25	\$138.75	\$4.16
First-class rate	St. Louis, Mo. St. Louis, Mo. St. Louis, Mo.	New Orleans, La. Little Rock, Ark. Pine Bluff, Ark.	699 349 392	\$18.00 20.00	\$4.50 5.00	\$22.50 25.00	\$337.50 375.00	\$10.13 11.25
Extent of discrimination				\$2.00	\$0.50	\$2.50	\$37.50	\$1.12
First-class rate	Kansas City, Mo. Kansas City, Mo. Kansas City, Mo.	New Orleans, La. Little Rock, Ark. Pine Bluff, Ark.	880 527 570	\$18.00 20.00	\$4.50 5.00	\$22.50 25.00	\$337.50 375.00	\$10.13 11.25
Extent of discrimination				\$2.00	\$0.50	\$2.50	\$37.50	\$1.12
First-class rate	Chicago, Ill. Chicago, Ill.	Pensacola, Fla. Georgiana, Ala.	912 806	\$23.00 30.00	\$5.75 7.50	\$28.75 37.50	\$431.25 562.50	\$12.94 16.88
Extent of discrimination				\$7.00	\$1.75	\$8.75	\$131.25	\$3.94
First-class rate	New Orleans, La. New Orleans, La.	Tampa, Fla. Ocala, Fla.	828 717	\$24.40 28.50	\$6.10 6.70	\$30.50 35.20	\$467.50 502.50	\$13.73 15.08
Extent of discrimination				\$2.40	\$0.60	\$3.00	\$45.00	\$1.85
First-class rate	New Orleans, La.	Atlanta, Ga.	496	\$18.80	\$4.70	\$23.50	\$352.50	\$10.58

First-class rate.	New Orleans, La. New Orleans, La.	667 571	\$19.80 27.20	\$4.95 6.80	\$24.75 34.00	\$371.25 510.00	\$11.14 15.80
Extent of discrimination.	Augusta, Ga. Buck Head, Ga.						\$4.16
First-class rate.	Memphis, Tenn. Memphis, Tenn.	396 183	\$13.00 16.60	\$3.25 4.15	\$18.25 20.75	\$243.75 311.25	\$7.31 9.84
Extent of discrimination.	Mobile, Ala. Hattiesburg, Miss.	384 303	\$3.60 13.00	\$0.90 \$3.25	\$4.50 \$16.25	\$67.50 \$243.75	\$2.06 \$7.31
First-class rate.	Memphis, Tenn. Memphis, Tenn.		\$5.60 18.20	\$1.40 \$4.55	\$7.00 \$22.75	\$105.00 \$341.25	\$3.15 \$10.24
Extent of discrimination.	Savannah, Ga. Augusta, Ga.	699 589	20.60 22.40	5.15 \$0.60	25.75 \$3.00	396.25 \$45.00	11.59 \$1.35
First-class rate.	Memphis, Tenn. Memphis, Tenn.	699 347	\$18.20 18.80	\$4.55 4.70	\$22.75 23.50	\$341.25 352.50	\$10.24 10.58
Extent of discrimination.	Savannah, Ga. Montgomery, Ala.						\$0.34
First-class rate.	Memphis, Tenn. Memphis, Tenn.	948 418	\$18.20 20.60	\$4.55 5.15	\$22.75 25.75	\$341.25 396.25	\$10.24 11.59
Extent of discrimination.	Tampa, Fla. Atlanta, Ga. Macon, Ga.	508	\$0.60 \$2.40	\$0.15 \$0.60	\$0.75 \$3.00	\$11.25 \$45.00	\$0.34 \$1.35
First-class rate (See Note 9)	Memphis, Tenn. Memphis, Tenn.	637 150	\$13.00 14.00	\$3.25 3.50	\$16.25 17.50	\$243.75 262.50	\$7.31 7.88
Extent of discrimination.	Little Rock, Ark. Pine Bluff, Ark.	194					
First-class rate (See Note 9)	Memphis, Tenn. Memphis, Tenn.	637 294	\$13.00 23.40	\$3.25 5.85	\$16.25 29.25	\$243.75 498.75	\$7.31 13.16
Extent of discrimination.	New Orleans, La. Texasiana, Ark.						\$5.86
First-class rate.	St. Louis, Mo. St. Louis, Mo. St. Louis, Mo.	905 611 714	\$23.00 26.00	\$5.75 6.50	\$28.75 32.50	\$431.25 487.50	\$12.94 14.63
Extent of discrimination.	Savannah, Ga. Atlanta, Ga. Macon, Ga. Augusta, Ga.	782	\$3.00	\$0.75	\$3.75	\$56.25	\$1.69

FIRST-CLASS RATE DISCRIMINATION—Continued

Item	From—	To—	Long-and-short-haul mileage	Railroad charges per ton, prior to June 25, 1918	Unequal contribution per ton levied by the Government's 25% increase in freight rates, June 25, 1918	Total or present railroad charges per ton, including 25% increase	Total or present railroad charges per car, including 25% increase, 15-ton carload	Unjust application of Government's 3% war tax amount levied per carload
First class rate.	Cincinnati, O. Cincinnati, O. Cincinnati, O. Cincinnati, O.	New Orleans, La. Atlanta, Ga. Birmingham, Ala. Montgomery, Ala. Corinth, Miss.	885 488 481 605 438	\$19.60 21.40	\$4.90 5.35	\$24.50 26.75	\$367.50 401.25	\$11.03 12.04
Extent of discrimination.								
First-class rate.	Cincinnati, O. Cincinnati, O. Cincinnati, O.	New Orleans, La. Meridian, Miss. Hattiesburg, Miss.	885 633 718	\$1.80 \$19.60 25.20	\$0.45 \$4.90 6.30	\$2.25 \$24.50 31.50	\$33.75 \$367.50 472.50	\$1.01 \$11.03 14.18
Extent of discrimination.								
First-class rate.	Cincinnati, O. Cincinnati, O. Cincinnati, O. Cincinnati, O.	Savannah, Ga. Columbia, S. C. Spartanburg, S. C. Seneca, S. C.	755 602 569 640	\$5.60 \$19.00 21.00	\$1.40 \$4.75 5.25	\$7.00 \$23.75 26.25	\$105.00 \$356.25 393.75	\$3.15 \$10.69 11.81
Extent of discrimination.								
First-class rate.	New Orleans, La. New Orleans, La. New Orleans, La.	Savannah, Ga. Pittsview, Ala. Cotton, Ala.	661 397 387	\$2.00 \$18.20 23.80	\$0.50 \$4.55 5.95	\$2.50 \$22.75 29.75	\$37.50 \$341.25 446.25	\$1.12 \$10.24 13.39
Extent of discrimination.								
First-class rate.	New Orleans, La. New Orleans, La.	Savannah, Ga. Helena, Ga.	661 546	\$18.20 27.20	\$4.55 6.80	\$22.75 34.00	\$341.25 510.00	\$10.24 15.30
Extent of discrimination.								
				\$9.00	\$2.25	\$11.25	\$168.75	\$5.06

Item	From—	To—	short-haul mileage	charges per ton, prior to June 26, 1918	of the Government's 25% increase in freight rates, June 26, 1918	per ton, including 25% increase	road charges per car, including 25% increase	ment's 3% war tax, amount levied per carload
Canned goods	Kansas City, Mo. Kansas City, Mo.	Shreveport, La. Dallas, Tex.	560 517	\$6.80 9.20	\$1.65 2.80	\$8.25 11.90	30-ton carload \$247.50 \$45.00	\$7.43 10.36
Extent of discrimination				\$2.60	\$0.65	\$3.25	\$97.50	\$2.92
Paper, printing	Kansas City, Mo. Kansas City, Mo.	Shreveport, La. Dallas, Tex.	560 517	\$8.00 11.00	\$2.00 2.75	\$10.00 13.75	30-ton carload \$300.00 412.50	\$9.00 12.38
Extent of discrimination				\$3.00	\$0.75	\$3.75	\$112.50	\$3.33
Structural iron	Pittsburgh, Pa. Pittsburgh, Pa. Pittsburgh, Pa.	Houston, Tex. Ft. Worth, Tex. Dallas, Tex.	1,437 1,831 1,829	\$11.96 16.02	\$3.00 4.00	\$14.98 20.02	30-ton carload \$449.40 600.60	\$13.48 18.02
Extent of discrimination				\$4.04	\$1.00	\$5.04	\$151.20	\$4.54
Fruit jars	Pittsburgh, Pa. Pittsburgh, Pa. Pittsburgh, Pa.	Houston, Tex. Dallas, Tex. Ft. Worth, Tex.	1,437 1,829 1,831	\$11.78 19.02	\$2.95 4.75	\$14.73 23.77	20-ton carload \$294.60 476.40	\$3.84 14.26
Extent of discrimination				\$7.24	\$1.30	\$9.04	\$130.80	\$5.42
Agricultural implements, hand	Ft. Madison, Ia. Ft. Madison, Ia. Ft. Madison, Ia.	Houston, Tex. Dallas, Tex. Ft. Worth, Tex.	1,019 911 943	\$15.20 18.40	\$3.30 4.90	\$19.00 23.00	20-ton carload \$380.00 4.60	\$11.40 13.80
Extent of discrimination				\$3.20	\$0.30	\$4.00	\$80.00	\$2.40
Canned goods, fish, vegetables, etc.	Detroit, Mich. Detroit, Mich. Detroit, Mich.	Houston, Tex. Dallas, Tex. Ft. Worth, Tex.	1,304 1,196 1,228	\$11.92 13.58	\$2.98 3.40	\$14.90 16.98	30-ton carload \$447.00 509.40	\$13.41 16.28
Extent of discrimination				\$1.66	\$0.43	\$2.08	\$63.40	\$1.87

THE TEXAS SITUATION—Continued

Item	From—	To—	Long-and-short-haul mileage	Railroad charges per ton, prior to June 25, 1918	Unequal contribution per ton levied by the Government's 25% increase in freight rates, June 25, 1918	Total or present railroad charges per ton including 25% increase	Total or present railroad charges per car, including 25% increase	Unjust application of Government's 3% war tax, amount levied per carload
Glass lamp chimneys.....	Steubenville, Ohio.....	Houston, Tex.....	1,394	\$16.50	\$4.13	\$20.63	20-ton carload \$412.60	\$12.38
	Steubenville, Ohio.....	Dallas, Tex.....	1,296	21.76	5.45	27.21	5.42	16.33
	Steubenville, Ohio.....	Ft. Worth, Tex.....	1,318	\$5.26	\$1.32	\$6.58	\$181.60	\$3.95
Extent of discrimination.....								
Wheelbarrows.....	Chicago, Ill.....	Houston, Tex.....	1,100	\$13.80	\$3.45	\$17.25	20-ton carload \$345.00	\$10.35
	Chicago, Ill.....	Dallas, Tex.....	992	17.60	4.40	22.00	440.00	13.20
	Chicago, Ill.....	Ft. Worth, Tex.....	1,024	\$3.80	\$0.95	\$4.75	\$95.00	\$2.85
Cement.....	St. Louis, Mo.....	Houston, Tex.....	816	\$6.70	\$1.45	\$7.15	40-ton carload \$296.00	\$8.58
	St. Louis, Mo.....	Dallas, Tex.....	708	7.00	1.75	8.75	350.00	10.50
	St. Louis, Mo.....	Ft. Worth, Tex.....	740	\$1.30	\$0.30	\$1.60	\$64.00	\$1.92
Extent of discrimination.....								
Woven wire fencing.....	Nashville, Tenn.....	Houston, Tex.....	847	\$9.50	\$2.40	\$11.90	30-ton carload \$357.00	\$10.71
	Nashville, Tenn.....	Dallas, Tex.....	738	11.60	2.90	14.50	435.00	13.05
	Nashville, Tenn.....	Ft. Worth, Tex.....	771	\$2.10	\$0.50	\$2.60	\$78.00	\$2.34
Extent of discrimination.....								
Cotton piece goods.....	St. Louis, Mo.....	Houston, Tex.....	816	\$17.80	\$4.45	\$22.25	20-ton carload \$445.00	\$13.35
	St. Louis, Mo.....	Dallas, Tex.....	708	26.40	6.60	33.00	660.00	19.80
	St. Louis, Mo.....	Ft. Worth, Tex.....	740	\$8.60	\$2.15	\$10.75	\$215.00	\$6.45
Extent of discrimination.....								

Item	From—	To—	Long-and-short-haul mileage	Railroad charges per ton, per car, or freight, June 25, 1918	Unequal contribution per ton levied by the Government's 25% increase in freight rates, June 25, 1918	Total or present railroad charges per ton, including 25% increase	Total or present railroad charges per car, including 25% increase	Unjust application of Government's 3% war tax, amount levied per carload
Sugar and molasses (See Note 11)	New Orleans, La.	Memphis, Tenn.	400	\$3.00	\$0.75	\$3.75	\$112.50	\$3.38
	New Orleans, La.	Jackson, Miss.	183	4.20	1.06	5.26	157.50	4.73
Extent of discrimination				\$1.20	\$0.30	\$1.50	\$45.00	\$1.35
Sugar and molasses (See Note 10)	New Orleans, La.	Memphis, Tenn.	608	\$3.00	\$0.75	\$3.75	\$112.50	\$3.38
	New Orleans, La.	Walnut Lake, Ark.	400	4.80	1.20	6.00	180.00	5.40
	New Orleans, La.	Little Rock, Ark.	453					
Extent of discrimination				\$1.80	\$0.45	\$2.25	\$67.50	\$2.02
Sugar and molasses (See Note 10)	New Orleans, La.	Memphis, Tenn.	608	\$3.00	\$0.75	\$3.75	\$112.50	\$3.38
	New Orleans, La.	Longview, Tex.	391	8.80	2.20	11.00	\$30.00	9.90
Extent of discrimination				\$5.80	\$1.45	\$7.25	\$217.50	\$6.52
Sugar and molasses (See Note 10)	New Orleans, La.	Kansas City, Mo.	900	\$6.40	\$1.60	\$8.00	\$240.00	\$7.20
	New Orleans, La.	Dallas, Tex.	515	8.80	2.20	11.00	330.00	9.90
	New Orleans, La.	Ft. Worth, Tex.	547					
Extent of discrimination				\$2.40	\$0.60	\$3.00	\$90.00	\$2.70
Sugar and molasses	New Orleans, La.	Cincinnati, O.	885	\$5.00	\$1.25	\$6.25	\$187.50	\$5.68
	New Orleans, La.	Sheffield, Ala.	400					
	New Orleans, La.	Atlanta, Ga.	496	6.40	1.60	8.00	240.00	7.20
	New Orleans, La.	Chattanooga, Tenn.	634					
Extent of discrimination				\$1.40	\$0.35	\$1.75	\$52.50	\$1.57

THE SOUTHERN STATES SITUATION—Continued

Item	From—	To—	Long-and-short-haul mileage	Railroad charges per ton, prior to June 25, 1918	Unequal contribution per ton levied by the Government's 25% increase in freight rates, June 25, 1918.	Total or present railroad charges per ton, including 25% increase	Total or present railroad charges per carload, including 25% increase	Unjust application of Government's 3% war tax, amount levied per carload
Sugar and molasses	New Orleans, La. New Orleans, La.	Cincinnati, O. Danville, Ky.	835 718	\$5.00 7.80	\$1.25 1.95	\$6.25 9.75	30-ton carload \$187.50 292.50	\$5.63 8.78
Extent of discrimination				\$2.80	\$0.70	\$3.50	\$105.00	\$3.15
Sugar and molasses	New Orleans, La. New Orleans, La.	Cincinnati, O. Bowling Green, Ky.	835 608	\$5.00 6.60	\$1.25 1.65	\$6.25 8.25	30-ton carload \$187.50 247.50	\$5.63 7.43
Extent of discrimination				\$1.60	\$0.40	\$2.00	\$60.00	\$1.80
Sugar and molasses	New Orleans, La. New Orleans, La. New Orleans, La. New Orleans, La. New Orleans, La.	Norfolk, Va. Asheville, N. C. Fayetteville, N. C. Raleigh, N. C. Greensboro, N. C.	1,093 737 586 918 857	\$4.00 8.80	\$1.00 2.20	\$5.00 11.00	30-ton carload \$150.00 330.00	\$4.50 9.90
Extent of discrimination				\$4.80	\$1.20	\$6.00	\$180.00	\$5.40
Sugar and molasses	New Orleans, La. New Orleans, La.	Norfolk, Va. Bristol, Va. & Tenn.	1,093 685	\$4.00 7.60	\$1.00 1.90	\$5.00 9.50	30-ton carload \$150.00 285.00	\$4.50 8.55
Extent of discrimination				\$3.60	\$0.90	\$4.50	\$135.00	\$4.05
Sugar and molasses	New Orleans, La. New Orleans, La.	Norfolk, Va. Spartanburg, S. C.	1,093 688	\$4.00 8.00	\$1.00 2.00	\$5.00 10.00	30-ton carload \$150.00 300.00	\$4.50 9.00
Extent of discrimination				\$4.00	\$1.00	\$5.00	\$150.00	\$4.50
Sugar and molasses	New Orleans, La. New Orleans, La. New Orleans, La.	Savannah, Ga. Anniston, Ala. Lagrange, Ga.	661 892 965	\$5.00 6.40	\$1.25 1.60	\$6.25 8.00	30-ton carload \$187.50 240.00	\$5.63 7.20

Extent of discrimination.....				\$0.40	\$0.10	\$0.50	\$15.00	\$0.45
Canned vegetables (See Notes 1 and 12).....	New Albany, Ind. New Albany, Ind.	Virginia cities Greensboro, N. C.	998 884	\$4.40 8.60	\$1.10 2.15	\$5.50 10.75	30-ton carload \$155.00 322.50	\$4.95 9.88
Extent of discrimination.....				\$4.20	\$1.05	\$5.25	\$157.50	\$4.73
Canned goods (See Notes 1 and 12).....	San Francisco, Cal. San Francisco, Cal.	Virginia cities Greensboro, N. C.	3,277 3,179	\$14.50 18.50	\$3.65 4.65	\$18.15 23.15	30-ton carload \$544.50 684.50	\$16.34 20.84
Extent of discrimination.....				\$4.00	\$1.00	\$5.00	\$150.00	\$4.50

WESTERN AND SOUTHERN TERRITORIAL SITUATION Special Class or Commodity Carload Rates

Dried beans (See Notes 1 and 12).....	San Francisco, Cal. San Francisco, Cal.	Virginia cities Greensboro, N. C.	3,277 3,179	\$15.00 18.40	\$3.75 4.60	\$18.75 23.00	25-ton carload \$468.75 575.00	\$14.06 17.25
Extent of discrimination.....				\$3.40	\$0.85	\$4.25	\$106.25	\$3.19
Dried fruits (See Notes 1 and 12).....	San Francisco, Cal. San Francisco, Cal.	Virginia cities Greensboro, N. C.	3,277 3,179	\$20.00 24.40	\$5.00 6.10	\$25.00 30.50	30-ton carload \$750.00 915.00	\$22.50 27.45
Extent of discrimination.....				\$4.40	\$1.10	\$5.50	\$165.00	\$4.95
Canned salmon (See Notes 1 and 12).....	San Francisco, Cal. San Francisco, Cal.	Virginia cities Greensboro, N. C.	3,277 3,179	\$14.40 18.40	\$3.60 4.60	\$18.00 23.00	35-ton carload \$530.00 805.00	\$18.90 24.15
Extent of discrimination.....				\$4.00	\$1.00	\$5.00	\$175.00	\$5.25
Flour (See Notes 2 and 3).....	Portland, Oreg. Nevada milling pts.	Memphis, Tenn. Memphis, Tenn.	2,453 2,135	\$11.00 14.00	\$1.20 1.20	\$12.20 15.20	40-ton carload \$488.00 608.00	\$14.64 18.24
Extent of discrimination.....				\$3.00		\$3.00	\$120.00	\$3.60

WESTERN AND SOUTHERN TERRITORIAL SITUATION—Continued

Item	From—	To—	Long-and-short-haul mileage	Railroad charges per ton prior to June 25, 1918	Unequal contribution per ton levied by the Govern-ment's 25% increase in freight rates, June 25, 1918	Total or present rail-road charges per ton in-cluding 25% increase	Total or present rail-road charges per car in-cluding 25% increase	Unjust application of Govern-ment's 3% war tax amount levied per carload
Flour (See Notes 4 and 5)	Portland, Oreg. San Francisco, Sac-ramento, Stockton, and Fresno, Cal.	New Orleans, La. New Orleans, La.	3,108 2,374	\$12.00 14.00	\$1.20 1.20	\$13.20 15.20	40-ton carload \$528.00 608.00	\$15.84 18.24
Extent of discrimination				\$2.00		\$2.00	\$80.00	\$2.40
Flour (See Note 6)	Portland, Oreg.	New Orleans, La. Central Texas pts.	2,739 2,192	\$12.00 16.00	\$1.20 1.20	\$13.20 16.20	40-ton carload \$528.00 648.00	\$15.84 19.44
Extent of discrimination				\$3.00		\$3.00	\$120.00	\$3.60

EAST-BOUND TRANSCONTINENTAL SITUATION
Special Class or Commodity Carload Rates

Wool (See Note 7)	San Francisco, Cal. Nevada points	Boston, Mass. Boston, Mass.	3,313 2,806	\$20.00 39.60	\$5.00 9.90	\$25.00 49.50	20-ton carload \$500.00 990.00	\$15.00 29.70
Extent of discrimination				\$19.60	\$4.90	\$24.50	\$490.00	\$14.70
Sugar	San Francisco, Cal. San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Reno, Nevada Loveland, Nevada	2,279 244 345	\$9.60 10.10	\$4.40 2.55	\$14.00 12.65	40-ton carload \$560.00 506.00	\$16.80 15.18
Extent of discrimination				\$0.50				
Sugar	San Francisco, Cal.	Chicago, Ill.	2,279	\$9.60	\$4.40	\$14.00	40-ton carload \$560.00	\$16.80

RAILROAD AND PUBLIC SERVICE COMMISSIONS

Extent of discrimination.				\$1.40		\$1.40	\$56.00	\$1.68
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Phoenix, Ariz.	2,279 902	\$9.60 12.00	\$4.40 4.40	\$14.00 16.40	40-ton carload \$560.00 616.00	\$16.80 \$560.00 19.68
Extent of discrimination.				\$2.40		\$2.40	\$96.00	\$2.88
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Salt Lake City, Utah	2,279 818	\$9.60 11.00	\$4.40 4.40	\$14.00 16.40	40-ton carload \$560.00 616.00	\$16.80 \$560.00 18.48
Extent of discrimination.				\$1.40		\$1.40	\$56.00	\$1.68
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Cheyenne, Wyo.	2,279 1,267	\$9.60 11.00	\$4.40 4.40	\$14.00 16.40	40-ton carload \$560.00 616.00	\$16.80 \$560.00 18.48
Extent of discrimination.				\$1.40		\$1.40	\$56.00	\$1.68
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Boise City, Idaho	2,279 1,185	\$9.60 15.00	\$4.40 4.40	\$14.00 19.40	40-ton carload \$560.00 776.00	\$16.80 \$560.00 23.28
Extent of discrimination.				\$5.40		\$5.40	\$216.00	\$6.48
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Denver, Colo.	2,279 1,376	\$9.60 11.00	\$4.40 4.40	\$14.00 16.40	40-ton carload \$560.00 616.00	\$16.80 \$560.00 18.48
Extent of discrimination.				\$1.40		\$1.40	\$56.00	\$1.68
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Albuquerque, N. M.	2,279 1,200	\$9.60 11.00	\$4.40 4.40	\$14.00 15.40	40-ton carload \$560.00 616.00	\$16.80 \$560.00 18.48
Extent of discrimination.				\$1.40		\$1.40	\$56.00	\$1.68
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Topeka, Kan.	2,279 1,943	\$9.60 11.00	\$4.40 4.40	\$14.00 15.40	40-ton carload \$560.00 616.00	\$16.80 \$560.00 18.48
Extent of discrimination.				\$1.40		\$1.40	\$56.00	\$1.68

EAST-BOUND TRANSCONTINENTAL SITUATION—Continued

Item	From—	To—	Long-and-short-haul mileage	Railroad charges per ton, prior to June 25, 1918	Unequal contribution, per ton, levied by the Government's 25% increase in freight rates, June 25, 1918	Total or present railroad charges per ton, including 25% increase	Total or present railroad charges per car, including 25% increase	Unjust application of Government's 3% war tax, amount levied per carload
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Kansas City, Mo.	2,279 1,966	\$9.60 11.00	\$4.40 4.40	\$14.00 15.40	40-ton carload \$560.00 616.00	\$16.80 18.48
Extent of discrimination				\$1.40		\$1.40	\$56.00	\$1.68
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Des Moines, Ia.	2,279 1,962	\$9.60 11.00	\$4.40 4.40	\$14.00 15.40	40-ton carload \$560.00 616.00	\$16.80 18.48
Extent of discrimination				\$1.40		\$1.40	\$56.00	\$1.68
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Omaha, Neb.	2,279 1,786	\$9.60 11.00	\$4.40 4.40	\$14.00 15.40	40-ton carload \$560.00 616.00	\$16.80 18.48
Extent of discrimination				\$1.40		\$1.40	\$56.00	\$1.68
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. St. Paul, Minn.	2,279 2,091	\$9.60 11.00	\$4.40 4.40	\$14.00 15.40	40-ton carload \$560.00 616.00	\$16.80 18.48
Extent of discrimination				\$1.40		\$1.40	\$56.00	\$1.68
Sugar	San Francisco, Cal. San Francisco, Cal.	St. Paul, Minn. Helena, Mont.	2,091 1,256	\$11.00 17.00	\$4.40 4.40	\$15.40 21.40	40-ton carload \$616.00 856.00	\$18.48 25.68
Extent of discrimination				\$6.00		\$6.00	\$240.00	\$7.20
Sugar	San Francisco, Cal. San Francisco, Cal.	St. Paul, Minn. Fargo, N. D.	2,091 2,061	\$11.00 15.00	\$4.40 4.40	\$15.40 19.40	40-ton carload \$616.00 776.00	\$18.48 23.28
Extent of discrimination				\$4.00		\$4.00	\$160.00	\$4.80
Sugar	San Francisco, Cal.	St. Paul, Minn.	2,091	\$11.00	\$4.40	\$15.40	40-ton carload \$616.00	\$18.48

Sugar	San Francisco, Cal. San Francisco, Cal. San Francisco, Cal.	Milwaukee, Wis. Portage, Wis. Madison, Wis.	2,364 2,276 2,249	\$12.00 14.00 \$2.00	\$4.40 4.40	\$16.40 18.40 \$2.00	40-ton carload \$666.00 786.00	\$19.68 22.08 \$2.40
Extent of discrimination								
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Little Rock, Ark.	2,279 2,207	\$9.60 12.00 \$2.40	\$4.40 4.40	\$14.00 16.40 \$2.40	40-ton carload \$660.00 666.00	\$16.80 19.68 \$2.68
Extent of discrimination								
Sugar	San Francisco, Cal. San Francisco, Cal.	Chicago, Ill. Oklahoma City, Okl.	2,279 1,849	\$9.60 12.60 \$3.00	\$4.40 4.40	\$14.00 17.00 \$3.00	40-ton carload \$660.00 660.00	\$16.80 20.40 \$3.60
Extent of discrimination								
Sugar (See Note 8)	San Francisco, Cal. San Francisco, Cal.	New York, N. Y. Montana points	3,191 1,400	\$15.90 17.00 \$1.10	\$4.40 4.40	\$20.30 21.40 \$1.10	40-ton carload \$812.00 866.00	\$24.96 26.08 \$1.32
Extent of discrimination								
Sugar (See Note 1)	San Francisco, Cal. San Francisco, Cal.	Virginia cities Chattanooga, Tenn.	3,137 2,672	\$15.90 18.60 \$3.30	\$4.40 4.40	\$19.70 23.00 \$3.30	40-ton carload \$788.00 920.00	\$23.64 27.60 \$3.96
Extent of discrimination								
Sugar (See Note 1)	San Francisco, Cal. San Francisco, Cal.	Virginia cities Nashville, Tenn.	3,137 2,621	\$15.90 16.00 \$0.70	\$4.40 4.40	\$19.70 20.40 \$0.70	40-ton carload \$788.00 816.00	\$23.64 24.48 \$0.84
Extent of discrimination								
Sugar (See Note 1)	San Francisco, Cal. San Francisco, Cal. San Francisco, Cal.	Virginia cities Lexington, Tenn. Jackson, Miss.	3,137 2,472 2,464	\$15.90 17.60 \$2.20	\$4.40 4.40	\$19.70 21.90 \$2.20	40-ton carload \$788.00 876.00	\$23.64 26.28 \$2.64
Extent of discrimination								

EAST-BOUND TRANSCONTINENTAL SITUATION—Continued

Item	From—	To—	Long-and-short-haul mileage	Railroad charges per ton, prior to June 25, 1918	Unequal contribution per ton levied by the Government's 25% increase in freight rates, June 25, 1918	Total or present railroad charges per ton, including 25% increase	Total or present railroad charges per car, including 25% increase	Unjust application of Government's 3% war tax amount levied per carload
Sugar (See Note 1)	San Francisco, Cal. San Francisco, Cal. San Francisco, Cal. San Francisco, Cal. San Francisco, Cal.	Virginia cities McKenzie, Tenn. Paris, Tenn. Perryville, Tenn. Hollow Rock Jet.	3,137 2,869 2,886 2,889 2,896	\$15.80 18.00	\$4.40 4.40		40-ton carload \$788.00	\$23.64 26.88
Extent of discrimination				\$2.70		\$2.70	\$108.00	\$3.24
Sugar	San Francisco, Cal. San Francisco, Cal. San Francisco, Cal.	Memphis, Tenn. Santa Fe, N. M. Amarillo, Tex.	2,325 1,300 1,576	\$12.00 13.00	\$4.40 4.40	\$16.40 17.40	40-ton carload \$656.00 686.00	\$19.68 20.88
Extent of discrimination				\$1.00		\$1.00	\$40.00	\$1.20
Sugar	San Francisco, Cal. San Francisco, Cal. San Francisco, Cal. San Francisco, Cal.	Memphis, Tenn. Monroe, La. Fort Worth, Tex. Dallas, Tex.	2,235 2,250 1,915 1,945	\$12.00 17.00	\$4.40 4.40	\$16.40 21.40	40-ton carload \$656.00 866.00	\$19.68 25.68
Extent of discrimination				\$5.00		\$5.00	\$200.00	\$6.00
Coffee, roasted	Galveston, Tex. Galveston, Tex.	Kansas City, Mo. Oklahoma City, Okl.	806 561	\$8.80 12.80	\$2.20 3.20	\$11.00 16.00	30-ton carload \$330.00 480.00	\$9.90 14.40
Extent of discrimination				\$4.00	\$1.00	\$5.00	\$150.00	\$4.50
Coffee, green	Galveston, Tex. Galveston, Tex.	Kansas City, Mo. Oklahoma City, Okl.	806 561	\$5.80 11.80	\$1.45 2.90	\$7.25 14.40	30-ton carload \$217.50 432.00	\$6.53 12.96
Extent of discrimination				\$5.70	\$1.45	\$7.15	\$214.50	\$6.45

Extent of discrimination.	San Francisco, Cal. Goldfield, Nevada.	2,279 514	29.00	\$3.80 7.25	\$18.40 36.25	\$752.00 1,450.00	\$22.56 48.50
Asphaltum.	San Francisco, Cal. Chicago, Ill. Goldfield, Nevada.	2,279 514	\$14.00	\$3.45	\$17.45	\$698.00	\$20.94
Extent of discrimination						40-ton carload	
			\$10.00	\$2.50	\$12.50	\$500.00	\$15.00
			14.60	8.65	18.25	730.00	21.90
			\$4.60	\$1.15	\$5.75	\$230.00	\$6.90
Asphaltum.	San Francisco, Cal. New York, N. Y. Goldfield, Nevada.	3,191 514	\$12.00	\$3.00	\$15.00	40-ton carload	\$18.00
Extent of discrimination			14.60	8.65	18.25	\$900.00	21.90
			\$2.60	\$0.65	\$3.25	730.00	\$3.90
Canned goods.	San Francisco, Cal. New York, N. Y. Chicago, Ill. Goldfield, Nevada.	3,191 2,279 514	\$14.50	\$3.65	\$18.15	30-ton carload	\$16.34
Extent of discrimination			\$9.00	7.25	36.25	\$644.50	32.68
			\$14.50	\$3.60	\$18.10	\$648.00	\$16.29
Barley.	San Francisco, Cal. Chicago, Ill. Goldfield, Nevada.	2,279 514	\$10.00	\$1.20	\$11.20	40-ton carload	\$13.44
Extent of discrimination			11.75	1.20	12.95	\$448.00	15.54
			\$1.75		\$1.75	\$70.00	\$2.10
Packing-house products.	San Francisco, Cal. Chicago, Ill. Goldfield, Nevada.	2,279 514	\$33.00	\$8.25	\$41.25	20-ton carload	\$24.76
Extent of discrimination			29.00	7.25	36.25	\$825.00	21.76
						725.00	
Packing-house products.	San Francisco, Cal. Denver, Colo. Goldfield, Nevada.	1,376 514	\$23.00	\$7.00	\$35.00	20-ton carload	\$21.00
Extent of discrimination			29.00	7.25	36.25	\$700.00	21.76
			\$1.00	\$0.25	\$1.25	\$25.00	\$0.75
Sugar.	San Francisco, Cal. Chicago, Ill. Goldfield, Nevada.	2,279 514	\$9.80	\$4.40	\$14.00	40-ton carload	\$16.80
Extent of discrimination			29.00	4.40	33.40	\$580.00	40.08
			\$19.40		\$19.40	1,336.00	\$23.28
						\$776.00	

Passenger-Fare Discrimination Against Nevada, Arizona, and New Mexico

Item	From—	To—	Mileage	Passenger fare per mile (in cents)	Railroad charges per passenger prior to June 25, 1918	Unequal contribution levied by the Government's war emergency increase for Pullman service	Total charges per passenger, including Government increase	Unjustly discriminatory application of Government's 8% war tax on charges per passenger
First-class fare	Reno, Nevada Sacramento, Cal.	Mina, Nevada Shasta, Cal.	175 225	4-5 3	\$8.30 6.75	\$1.39 1.13	\$9.69 7.88	\$0.78 0.63
Extent of discrimination					\$1.55	\$0.26	\$1.81	\$0.15
First-class fare	Reno, Nevada Boise, Idaho	Montello, Nevada Salt Lake City, Utah	420 478	4 3	\$16.90 14.34	\$2.80 2.39	\$19.70 16.73	\$1.57 1.34
Extent of discrimination					\$2.56	\$0.41	\$2.97	\$0.23
First-class fare	Caliente, Nevada San Francisco, Cal.	Jean, Nevada Fresno, Cal.	170 205	4½ 3	\$8.00 6.14	\$1.33 1.02	\$9.33 7.16	\$0.75 0.57
Extent of discrimination					\$1.86	\$0.31	\$2.17	\$0.18
First-class fare	Needles, Ariz. Bakersfield, Cal.	Williams, Ariz. Stockton, Cal.	200 233	4 3	\$8.00 7.00	\$1.33 1.17	\$9.33 8.17	\$0.75 0.65
Extent of discrimination					\$1.00	\$0.16	\$1.16	\$0.10
First-class fare	Bowie, Ariz. Bakersfield, Cal.	Yuma, Ariz. Dunsmuir, Cal.	400 525	4 3	\$16.00 15.75	\$2.67 2.63	\$18.67 18.38	\$1.49 1.47
Extent of discrimination					\$0.25	\$0.04	\$0.29	\$0.02
First-class fare	Gallup, N. M. Ogden, Utah	Raton, N. M. Cheyenne, Wyo.	405 500	4 3	\$16.20 15.00	\$2.70 2.50	\$18.90 17.50	\$1.51 1.40

on the main lines and of a 3-cent fare on the branch lines, including the privilege of standard sleeping-car service at regular rates. It therefore follows that the effect of Order No. 28 resulted in increasing passenger fares in Nevada, Arizona, and New Mexico from 25 to 38.4 per cent. Aside from the increase for Pullman-car service, which has recently been canceled, the increases and discrimination herein referred to are still being perpetuated by the Government.

NOTE—Because of Railroad Administration Order No. 28, effective June 25, 1918, the above passenger fares were increased 18½ per cent where standard sleeping-car service was taken, thus increasing the fares to 4.66 cents per mile on the main line and to 5.83 cents on the branch lines; further, said order eliminated from use all scrip-books and round trips, privileges which were formerly enjoyed under private operation. In this behalf the prewar \$90 scrip books gave the owners thereof the equivalent of a 2½-cent passenger fare

The aforesaid statistical analysis is typical of the prewar and present situation throughout the Intermountain and Southern States. While only a few of the many long-and-short-haul rates have been reviewed, they illustrate and supplement what has been said before regarding how the Pacific Coast and Gulf terminals have been built up at the expense of the intermediate sections, and they show the reasons why these sections have been, and are, unable to advance industrially and commercially.

Further, aside from the unjust and unequal burden of taxation which has been levied against said sections by the Government for the support of the war, it illustrates how the railroad long-and-short-haul charges are constructed in order to control the channels of industry and trade and thereby produce long-, double- and treble-haul transportation, and this without regard to the fact that it involves an additional and wasteful railroad service throughout all intermediate territories. For example, throughout Nevada and other intermountain territories this waste comprises two heavy operations over the Sierra Nevada and Cascade Mountains, one of the heaviest ranges in the entire United States. Manifestly, if there were a wise national policy which would enable the intermediate sections of the Western and Southern States to manufacture and supply themselves, very substantial economy to the producers and consumers would be effected by the elimination of the unnecessary and expensive back-haul transportation, covering distances ranging from 250 to 1,500 miles to and from the Pacific Coast and Gulf terminals.

"OUT-OF-POCKET-COST" THEORY

It was further shown that the "out-of-pocket-cost" theory, about which so much is said by the railroads in characterization and justification of said preferentially low rates maintained at favored industrial and commercial centers, would not stand fair analysis. "Out-of-pocket-cost" rates, as defined by the railroads, are said to represent merely something above the expenditure incurred for carrying that class of competitive traffic which it is claimed could not be secured under a fully compensatory rate. Without cost analysis, the statement is made by the carriers that, as all overhead expenses are fixed, the revenue which will accrue from the establishment of the said out-of-pocket-cost rate or rates will thus add to the income of the carrier or carriers. This theory is the main justification advanced by the carriers for the maintenance of preferentially low rates at industrial and commercial centers. Therefore, these rates cover an enormous volume of business instead of a small pickup, or incidental, business, which the aforesaid term and its definition readily conveys to the average mind.

The impression has been skilfully conveyed that the business is purely incidental and that its cost is not susceptible of determination. In this connection, it was shown that the long-and-short-haul rates to the Pacific Coast terminals on west-bound transcontinental business, instead of representing merely out-of-pocket-cost revenue, were, in fact, highly compensatory based on the cost of the service, when measured by data put in evidence by the Nevada Railroad Commission before the Interstate Commerce Commission, and which was made a part of the opinion in the transcontinental rate cases, decided June 22, 1911 (I. C. C. 239).

On this question, Commissioner J. F. Shaughnessy, testifying before the House Committee on Interstate Commerce, said:

As to the other statement, that out-of-pocket-cost rates cannot be determined, and that the carriers cannot tell what they are, I want to say, in challenging this statement, that there is absolute confusion and misconception in the use of the term "out-of-pocket cost." What is meant, when properly defined, is the segregated or actual cost. In other words, a fair proportion of all costs assignable, considering load factor per train and per car and the distance hauled. Now, then, I contend that transcontinental traffic moving in trainload and carload lots can be established as to its cost just as well as it can in a manufacturing industry or any other industry in which cost data must be carefully allocated in order to segregate and fix the selling prices of different contract work. It can be done, and we have done it on behalf of the Nevada Railroad Commission and put it in evidence before the Interstate Commerce Commission. The Railroad Commission of Wisconsin has done it also, not perhaps before the Interstate Commerce Commission but before its own body. It has most elaborate cost data, not only as to the moving of traffic in trainload lots, but in carload lots, and even in less than carload lots. Now, I want to say that it is the rule of the railroads themselves to make up this cost data, and they do make it up in the form of a monthly exhibit of operations, and they know, within a very close approximation, just what it costs them to handle their traffic on a per unit of traffic basis, either per ton-mile or per engine-mile or per train-mile, or in trainload lots, or in carload lots, or any way they want to figure it.

During the course of the Intermountain Rate Cases, I submitted a brief before the Interstate Commerce Commission in which I analyzed the cost of moving trans-state traffic in trainload lots from Ogden, Utah, to San Francisco, and showed that the actual or full cost of operation was 2.74 mills per ton per mile. This figure is probably higher than the actual cross-continent cost from ocean to ocean, because the level haul mileage is so much greater that it would substantially reduce the constructive mountain mileage cost that I used in the ratio of two to one over the Sierra Nevada Mountains, a distance of 158 miles out of 786, the total mileage used in the calculation.

But applying this factor (2.74 mills) the actual cost of operation from New York City to San Francisco, a distance of 3,200 miles, is \$8.17 per ton. From Pittsburgh to San Francisco, a distance of 2,750 miles, the actual cost of operation is \$7.53 per ton. From Chicago, a distance of 2,279 miles, the actual cost of operation is \$6.25 per ton. From Kansas City, or other Missouri River points, an average distance of 1,800 miles, the actual cost is \$4.93 per ton. (See my testimony on this question before the Senate Committee.)

Compared with these costs, the average carload rate authorized on the basis of the Commission's Schedule "C" order of January 29, 1915, from all of this territory to San Francisco was \$15.63 per ton, carloads, and \$30 per ton, less than carloads, whereas to Reno it was \$19.77 per ton, carloads, and \$37.55 per ton, less than carload. Contrast the cost with these average rates authorized by the Commission in 1915, and which have since been substantially increased, and it must be apparent how highly profitable the Pacific Coast traffic is and how outrageously unjust and unnecessary it is to assess the higher rates at the intermediate shorter-haul points. Keep in mind also that these figures as to the cost of handling this traffic are not less than fairly representative when it is remembered that the carriers have classified their business and fixed their rates on purely local business within each State and between neighboring States on a high level in order to compensate for the high cost of these relatively short-haul movements. Conversely, therefore, the low cost must apply on this exceedingly long-haul transcontinental traffic, which, by the way, is not ordinary interstate traffic between one State and another. On the contrary, it is "trans-state traffic," moving entirely across many States, as if over a bridge, and as the compensation gathered per mile-unit of traffic is exceedingly low and in no way comparable with the state and interstate local traffic, manifestly its cost is correspondingly low. Now then, if the cost analysis establishes the compensatory character of these so-called forced and compelled rates to the Pacific Coast terminals, and I maintain that it does, there has never in fact been any reason, other than railroad policy, for the charging of higher rates at the shorter-haul

intermediate points. And this being true, there was never, nor is there now, for the future, any reason why the rail carriers cannot meet water competition reasonably and effectively without violating the long-and-short-haul rule of the fourth section.

In connection with this segregation of the cost of performing this long-haul service, keep in mind the fact that every local community in this country paying relatively high rates on all local short-haul traffic to take care of the cost of the service incident thereto and to enable this long-haul, trans-state traffic to move at exceedingly low rates.

Now, the basis from which these cost figures are taken was put in evidence before the Interstate Commerce Commission and the reasonableness of the rates before the Commission was fully made upon such testimony as that. That is only a small résumé of it. That cost testimony stands today absolutely uncontradicted. It has never been met. The railroads have been challenged to meet it over and over again. They elect not to meet it. They will continue to meet it. They go upon the theory that their rates can be better initiated, better maintained and better justified upon the basis of rate comparisons, sufficiency of income, and other considerations than they can upon a cost basis, and, therefore, that is the reason why they have never met them. But when they come before your honorable committee and tell you that they cannot establish the segregated or actual cost of moving any particular class of their traffic that moves in as substantial volume as does transcontinental traffic, I must respectfully disagree with them.

UNITED STATES SUPREME COURT HOLDS THAT EACH CLASS OF TRAFFIC MUST BEAR ITS FULL SHARE OF ALL COSTS

Further, when effort was made by the State of South Dakota to apply this railroad theory of "out-of-pocket cost" to its domestic commerce, it failed to stand the test of fair analysis by the United States Supreme Court because violative of the following fundamental principles:

Where the State has attempted to fix a rate for the transportation of a commodity under which, taking the results of the business to which the rate is applied, the carrier is compelled to transport the commodity for less than cost or without substantial compensation in addition to cost. * * * all the outlays which pertain to it must be considered. We find no basis for distinguishing in this respect between so-called "out-of-pocket-costs" or "actual expenses, and other outlays which are none the less actually made because they are applicable to all traffic, instead of being exclusively incurred in the traffic in question. Illustrations are found in outlays for maintenance of way and structures, general expenses, and taxes. It is not a sufficient reason for excluding such, or other expenses, to say that they would still have been incurred had the particular commodity not been transported; the common carrier is under a duty to carry, and the expenses of its business at a particular time are attributable to what it does carry. The State cannot estimate the cost of carrying coal by throwing the expense incident to the maintenance of the roadbed and the general expenses, upon the carriage of wheat; or the cost of carrying wheat by throwing the burden of the upkeep of the property upon coal and other commodities. This, of course, does not mean that all commodities are to be treated as carried at the same rate of expense. The outlays that exclusively pertain to a given class of traffic must be assigned to that class, and other expenses must be fairly apportioned. It may be difficult to make such an apportionment, but, when conclusions are based on costs, the entire costs must be taken into account. (*Northern Pacific Ry. v. North Dakota*, 236 U. S. 594)

ARTIFICIAL STIMULUS UNDER PRESENT GOVERNMENT POLICY CONDEMNED BY JUDGE COOLEY

The administrative policy of the Government and its prejudicial effect upon the intermediate States was made clear by reference to various decisions of the Interstate Commerce Commission. For example, Judge Cooley, speaking upon the question of long-and-short-haul

discrimination at page 32 of the second annual report of the Interstate Commerce Commission, said:

It was impossible that it should be made to seem right to the common mind that such distinction should exist; the sense of justice received a shock when one was told that the small dealer in the country town was made to pay three times as much for the carriage of his goods as the city merchant paid upon the like quantity, for even a greater distance; and a well-founded feeling of discontent arises among any people when it can see things done under the protection of its law which seem to be plainly and unmistakably unjust.

It will probably not be claimed by any one that it is desirable to give by law or through the use of public convenience an artificial stimulus to the building up of cities at the expense of the country. In great cities great social and political evils always concentrate, grow, strengthen, and the larger the cities are the more difficult it is to bring these evils under legal or moral restraints. This fact is so generally recognized that the feeling may be said to be practically universal that the interest of any country is best consulted when public measures and the employment of public favor are devoted to the diffusion of population and the profitable employment of energy everywhere, rather than the concentration of population in few localities.

VICE OF GOVERNMENTAL POLICY AS NOTED BY THE INTER- STATE COMMERCE COMMISSION

In the Sacramento-San José-Santa Rosa case (29 I. C. C. 65) the Commission said, regarding the advantage enjoyed by the preferentially selected Pacific Coast ports:

There can be no question about the great commercial advantages which accrue to the towns having these rates. In the contest for new factories, to the industries looking for locations on the Pacific Coast the town with these rates has an advantage which cannot be overcome by its rivals not blessed with such rates. In one sense, the competition between cities for new factories and industries is more important than the competition between factories and industries already in those towns for trade.

New factories mean more workers, more money, more houses, and more people in general. After all, the struggle between these Pacific Coast cities and towns is essentially one for population. The record in these cases shows that, although the fact that the railroads have published tariffs eliminating San José, Santa Clara and Marysville from the coast or terminal points has been known only a few months, already these three points have felt the disadvantage of the possibility of ultimately losing such rates.

San José, for example, has been unable to secure certain new industries because of the uncertainty of its terminal-rate position.

In the Shreveport case (48 I. C. C. 370) the Commission, while authorizing long-and-short-haul discrimination from northern and eastern centers to Shreveport, La., argues against such discrimination in its effort to justify its order removing what may be termed local discrimination between cities of Louisiana and Texas, and which arose because the Texas Railroad Commission endeavored to offset the effect of said inbound long-and-short-haul discrimination at Shreveport by reducing its local distributive rates between points within the State of Texas to a lower basis than those from Shreveport to said Texas points. The Commission said:

If a single city in Texas, whether large or small, in the border of the State, or near its center, were denied the benefit of the equality of rates from and to all points that is accorded to all other cities in that State, no possible doubt could exist regarding the resulting undue prejudice and disadvantage.

It would manifest itself in the difficulty of attracting to such cities commercial houses, industries and population. To limit or restrict the area to and from which such city could ship on equal terms with other near-by points,

while the entire area of the State was open to all other cities, would be to place upon such locality a hopeless disadvantage.

Further, the repeated declaration of the railway and industrial interests, that preferential rates maintained to and from favored terminals do not act as a burden upon the intermediate sections, was shown to be erroneous by reference to the decision of the Interstate Commerce Commission in the intermountain rate cases (46 I. C. C. 236), where it said:

It is perfectly clear that the Pacific Coast cities have always paid lower transportation rates than they would have paid were it not for the facilities they have enjoyed for bringing manufactured articles from eastern manufacturing districts and for sending east the products of the coast cities by water. It is also clear that the intermountain section of the country has paid and now pays rates for the transportation of these manufactured articles which are higher proportionately than are paid by the coast cities and probably higher than it would be necessary to maintain if the rates to the coast cities could be maintained at a level more nearly proportionate to the service given.

ADMINISTRATIVE POLICY FURTHER EXEMPLIFIED

The administrative policy of the Government was further exemplified by referring to the Southeastern Cases, 30 I. C. C. 262, where, for example, the Federal Commission, in dealing with the Mississippi River Valley section of the Southern States, made a remarkable finding which confirms what is said hereinbefore regarding the position that has always been taken by said railroad, industrial and jobbing interests.

Neither is it true at present that there is any regular water service between New Orleans and Memphis. *It cannot, therefore, be asserted that there is an actual active water competition existing at present between New York and Memphis.* There is a disconnected service between New Orleans and Memphis by regular boats plying between Natchez and Vicksburg and Memphis. The water competition is to be regarded as *potential but not actual*, and the testimony in this case indicates that any material advance in the rates from New York City to Memphis would, *without doubt, result in reestablishment of active competition on the Mississippi River.*

It is evident that the rates and facilities afforded by the rail lines have had the effect of eventually attracting to these lines nearly all of the long distance traffic between Ohio River points, upper Mississippi River points and Missouri River points on the one hand, and New Orleans on the other. There is no reason for believing that the rates to New Orleans when established by the rail lines in 1887 and since maintained were not necessitated by an active compelling water competition. Without doubt, the changing demands of commerce, the increased facilities of the railroads, their better organization and regularity of service, have been influential in winning from them, not only a share of the traffic, but nearly all of the traffic. *The water competition, once actual and compelling, is still, however, potential, and it is most earnestly contended by the petitioners herein that any substantial increase in the rates to New Orleans will have the effect of reestablishing water competition, with the subsequent loss of traffic and revenue to the rail lines.* It is represented that, having secured this traffic through years of struggle, there is nothing in the fourth section of the Act to regulate commerce, as amended in 1910, that puts upon the rail carriers an obligation to establish rates which will restore to the boat lines the traffic they have lost.

Because of the above-stated reasons, the Commission specifically justified the railroad rate discrimination at all intermediate points throughout the Mississippi Valley States, on the ground that there was potential water competition. In other words, because the Mississippi River and its tributaries were in existence and improvements and betterments thereon amounting to more than \$100,000,000 have been made by the Government for the promotion of water transportation, the

potentiality of this great unused avenue of commerce was held to be sufficient justification for the continued maintenance of long-and-short-haul railroad rates, from which it follows, of course, that it has been impossible to establish water transportation and secure the benefits from the river for which the aforesaid exceedingly large public expenditures have been made.

The character of discrimination which was under consideration throughout the States south of the Ohio and Potomac Rivers in the aforesaid case may be illustrated by reference to the first-class freight rate covering the movement of high-grade manufactured articles between New York City and Memphis, as compared with the rate from New York to Grand Junction, Tenn., an intermediate shorter-haul point. To Memphis the distance is 1,150 miles and the rate was \$20 per ton, whereas to Grand Junction the distance is 1,100 miles and the rate was \$28 per ton, or a rate discrimination amounting to \$8 per ton for a fifty-mile shorter haul over the same line, in the same direction, and in the same train. There are thousands of such rate discriminations throughout the aforesaid Southern States which the Interstate Commerce Commission has refused to correct, largely for the reason stated in the above quotation.

Further, the suggestion in the Commission's decision that the fourth section as amended in 1910 is not broad enough or sufficiently specific to require the correction of the disabilities under which the intermediate or short-haul States suffer is highly important and strongly supports our contention for the passage of an absolute long-and-short-haul provision.

INVESTIGATION BY SECRETARY OF COMMERCE AND INLAND WATERWAYS COMMITTEE SHOWS FEDERAL POLICY DEFECTIVE

In further support of the aforesaid statement that the influence of said large industrial and railway interests has been and is directed toward the building up and perpetuation of the federal administrative policy in question, and that by unjust practices they control the commerce of the Nation and dictate the location of its facilities and agencies, reference was made to the investigation and the facts developed covering the causes of the decline of water transportation by Secretary of Commerce Redfield, for the National Council of Defense, and by the Inland Waterways Committee, for the National Council of Defense and also for the Railroad Administration, during 1917 and 1918.

Among others, the Inland Waterways Committee was officered at the period of these investigations by Major-General W. M. Black, as chairman, and Major-General Keller, as secretary. Both are nation-wide authorities on the questions of inland and waterway developments.

EXTRACTS FROM MAJOR-GENERAL KELLER'S TESTIMONY

Regarding water transportation, the causes of its decline and the remedial legislation necessary to make it effective, General Keller, in his testimony before the House Committee on Inland Water Transportation, January 25, 1918, said, in part:

We found that the conclusions to which former investigating bodies have come are emphasized by the results of our own inquiries. We already knew—we knew before we started—that there was little or no navigation. We also knew that there was comparatively little interest on the part of the various

local communities that seemingly ought to be very much interested in river navigation. We found out that the causes for this condition were the familiar causes that had been reported by one commission after another. * * And, second, there is the fear of hostility on the part of the railroads. It is possibly a familiar fact to this committee that the railroads do discriminate their dealings with people who attempt to use our inland channels. * * That they have the right to discriminate in this fashion, no one will maintain but that they practically do discriminate, no one will deny.

But, foremost of all, most fundamental of all, is the *detrimental effect of rail rates to river points*. The situation is so familiar that I forbear to enlarge upon it further than to say, that as a result of our investigations of previous inquiries of others and of a considerable period of personal experience with the matter, that I am convinced that no really successful navigation can be established unless the present structure of rail rates is completely revised, so as to take away from river communities those unjustly favorable rail rates that now exist and to distribute over the community in general, including river communities, the burden of contributing adequately toward the support of the railroads. At present the river communities do not pay their just share and traffic is handled to river points at unremunerative rates. Of course, the ultimate effect of that condition is to render river transportation unprofitable and practically impossible. The fundamental cause of the trouble was exposed many years ago and has been emphasized again and again. There is no novelty in the conclusions to which I have come and I will say that when I speak in the first person I speak the views of the committee. We believe that without the primary change in railroad rates comparatively little can be done to establish a really useful and prosperous traffic upon our inland navigation routes.

Just as long as this discriminatory state of railroad rates and practice is permitted to continue, only in exceptional cases will any channel, any inland channel, I mean, that competes mainly with railroads that parallel both banks let us say, be able to get any commerce at all. The conditions are such that every man who has business is practically afraid to use the river, even though deep down in his soul, he may believe that the river is the economical route.

While it is true that, on the present basis of railroad rates, general business cannot profitably be done by the canal, on the other hand it is equally true that with the breakdown of the railroad, business men are confronted with the question whether they should pay a higher rate to the canal and get their freight promptly, or pay to the railroads a lower rate for a slow and undeependable service.

The result is that the coal does not move by water. The barges have gone out of this coal business. *This is the shortsightedness of the people. They do not fight against railroad rates when in normal times these rates favor the individual at the expense of the community. When things are abnormal, however, these rates may militate against the individual as well as damage his interest.* We come back to the point that there is no prospect of large traffic inland waterways until the rail situation is very radically revised. * * *

Our remedy is to change the law, and that is, perhaps, more easily said than done. But I think that we all concede that this is the evil that must be cured, that railroads should not be permitted to discriminate in favor of certain communities and against others. *That is what it amounts to. When they can freight below cost to river points in any part of the country they must recover themselves by getting an extravagant and unjust profit on some of the rest of the business, the business to inland points.*

RESUME OF COMPREHENSIVE INVESTIGATION BY THE INLAND WATERWAYS COMMITTEE

A check of the testimony of record taken before said Inland Waterways Committee, strongly supports the aforesaid résumé of conditions by Major-General Keller, and also vigorously supplements from an impartial source the claims and the showings made by the Intermediary Rate Association in behalf of the passage of an absolute long-and-short-haul provision and such other and further relief by Congress as the circumstances warrant.

A digest of the more important testimony shows:

the waterway connecting the Delaware River and New York, which is under practically perpetual lease to the Pennsylvania Railroad, formerly carried a comparatively large traffic in hard coal. Now little used, although it might, with certain minor modifications, be made to advantage as one of the principal links of the through water route to New York. Its nonuse is naturally detrimental to the people of the seaboard States, but no remedy appears to exist short of the cooperation by the people of a parallel route.

NORTHERN RAILWAY REFUSES TO FURNISH CARS FOR JOINT RAIL AND WATER LINE SHIPMENT

It is the policy of the railroads to own perhaps a majority of the valuable docks and wharves all over the country on harbor, bay, river, canal and lake; and this is a relic of antiwater transportation policies which are inculcated in our railroad men from top to bottom.

As an effort to relieve rail congestion and patriotically to follow the lead of the War Department to use water transportation wherever possible, the Keystone Steel and Wire Company, late in 1917, endeavored to ship pig-iron by water route from Alabama to Peoria, Ill. A water haul was necessary, about thirty-five cars being needed. The Northern Railroad had the cars, but refused to furnish them for that purpose. A trip to Washington to get the aid of the War Department failed. Daniel Willard was necessary, and with their assistance the cars were obtained and the shipment started. Although several tugs were better adapted to conditions for navigation on the Tennessee, Mississippi, and Illinois Rivers were needed, the results of the experiment were so satisfactory that another trip was made, and water transportation became established for that company.

RAILROADS DIVERT TRAFFIC FROM ITS BOAT LINE TO ITS RAIL LINES

The New York, New Haven and Hartford Railroad persistently diverts traffic from its own water to its own rail lines, in spite of the fact that its boats were generally underloaded and that the water haul was frequently cheaper and quicker. Unfair apportionments of cost between boat and rail, lack of compact packing of freight on the boats and other methods were used to obscure the issue from the public. The company was certainly defrauded of its rights to have goods transported cheaply and as expeditiously as any available means would permit.

SECRETARY REDFIELD COMPLAINS

Secretary of Commerce, William Redfield, under date of August 18, 1918, complained to the committee that his investigation developed that where through joint rail and water rates were established by the railroads and water lines, such an excessive proportion of said joint rates was paid by the rail lines that the water lines are unable to participate in the business profitably, and this statement was illustrated by rates for the movement of coal from the Virginia fields, to Norfolk and New York via water north to Philadelphia, a distance of 300 miles by water. In other words, in this behalf, Major-General Black, in December, 1917, complained of the railway congestion, complained of the failure of the railroads to cooperate in working out plans that would conserve car equip-

ment for use in other sections of the country by diverting as much the slow-moving traffic as possible to the water carriers.

That the railways, on the other hand, contend for the maintenance all-rail rates, rather than participating in through joint rates with water lines through Norfolk to and from Philadelphia and other northern points, and this notwithstanding that the loaded movement was north-bound and there was a heavy empty-car movement south-bound. They also contended that there is a degradation or breakage of cost in the transferring to and from vessels, which results in a loss of from 25 to 35 cents per ton and that dealers have a decided preference for all-rail movement instead of joint rail and water movement.

That William S. Banks, editor of the Columbia Record of Columbia, S. C., stated on December 29, 1917, that the people of the country were entitled to a square deal from the Government and that it should prevent the railroads from destroying water transportation; that an expenditure of \$154,000,000 on the construction of the new Erie Canal had been made and that its exclusive operation was being obstructed by the railroads in order to offset its competitive effect on railroad business; that the Erie Canal connects the Great Lakes with fifteen States that it is 500 miles long, 12 feet deep and 75 feet wide at the bottom and capable of handling 75,000,000 tons annually from the Great Lakes to various Atlantic seaport points; and further that the State of Bavaria, Germany, appropriated, in February, 1917, \$156,000,000 for the connecting of the Danube and the Rhine Rivers by canal.

MISSISSIPPI RIVER IMPROVEMENT ASSOCIATION APPEALS FOR LEGISLATION

That Thomas Wilkinson, of Burlington, Iowa, president of the Upper Mississippi River Improvement Association, in February, 1918, made strong appeal to the committee urging the enactment of legislation compelling physical connection with railroads and providing for interchange of traffic and division of through joint rates, and also providing specifically against railroads making low rates at the water points or doing anything to obstruct and kill off water competition.

WATER TRANSPORTATION LEGISLATION PREPARED BUT WITHHELD

That, on February 19, 1918, Major-General Keller responded to Mr. Wilkinson by stating that, while in full agreement with his recommendations and while a draft of said remedial legislation had been prepared by the Inland Waterways Committee, to promote and safeguard waterway transportation against railroad rate discrimination it was "deemed by the Secretary of War to be unnecessary to press the legislation in question at that time; that the new Committee on Inland Waterways, created by the Director-General of Railroads, would undoubtedly give the matter further consideration and might regard it as so fundamental as to preclude its postponement."

LIGGETT & MEYERS TOBACCO COMPANY FORCED TO USE WATER TRANSPORTATION AT HIGHER THAN RAIL RATES

That, during the railroad congestion last winter, the Liggett & Myers Tobacco Company was unable to secure cars and was forced to ship 500 hogsheds of tobacco from Madison, Ind., to St. Louis by river, by

had to pay \$2.15 more per hogshead than the rail rate, in addition to the cost of hauling from the boat to the company's warehouse, which is served by industrial rail tracks. This is given as the reason by the local manager of the American Tobacco Company, at Owensboro, Ky., why more tobacco is not shipped by water.

PHOTOGRAPHS OF RIVER STEAMER SECURING TRAFFIC BRING RAILROAD CARS AND SERVICE

That, during the same period, Mr. J. M. Buckner of Louisville, Ky., could not get cars to ship tobacco. He thereupon chartered the river steamboat Inco, and transported his tobacco from Paducah, Ky., to New Orleans. While loading, he had photographs made of the operations and sent copies thereof to the presidents of the various railroads, and thereafter he was furnished sufficient cars and railway service.

AFTER CONTRACT WITH RIVER STEAMER AT HIGHER THAN RAIL RATES, RAILROADS FIND THIRTY CARS

That, during 1917, a shipment of thirty cars of hemp from St. Paul to St. Louis was held at St. Paul by the Northern Pacific Railway refusing to allow the cars carrying the traffic to go through to St. Louis. Appeal was made to the Chicago, Burlington and Quincy Railroad for relief, but that company also claimed inability to furnish cars. The St. Louis Cordage Company then made arrangements with a river steamboat line to move the shipment in question at a rate of 15 cents per hundred pounds, or \$72.50 in excess of the rail rate. Following notice that the shipment would move by water, the Chicago, Burlington and Quincy Railroad and the Minneapolis and St. Paul Railway became active and secured sufficient cars to release said Northern Pacific cars and, therefore, the shipment was moved over said rail lines.

BY PURCHASING STEAMBOAT WHICH IT DOES NOT OPERATE CEMENT COMPANY GIVEN SATISFACTORY RATES AND SERVICE

That formerly the Atlas Cement Company, at Hannibal, Mo., could not get into St. Paul over the rail lines advantageously. It purchased a steamboat and several barges and made one trip on the Missouri River between Hannibal and St. Paul. It was, thereafter, furnished satisfactory railway facilities and rates. The boats were operated for a time between St. Louis, Memphis, and New Orleans, and finally laid up, but are retained by the company, ostensibly for the purpose of controlling rates. The committee thought this was a case where railroad equipment could be released if the boats were continued in legitimate operation. (? ? ?)

VALUE OF RAIL AND WATER SERVICE COMPARED

That during April, 1918, Arbuckle & Co. advised Colonel Roberts of the committee that, while the water rate from Pittsburgh to Cincinnati is 7 cents per hundred pounds, and 15 cents by rail, on merchandise, when facilities and conveniences are considered, the rail charges are the cheapest.

VALUE RAIL SERVICE CHEAPER TO THE UNITED STATES STEEL CORPORATION

That J. A. Farrell, president of the United States Steel Corporation, in July, 1917, states that, because the railroads have paralleled the

rivers, his company's business is limited to very slow-moving freight and is of limited volume. Referring to plans his company had made to move the location of one of its plants to a river port so it could use water transportation exclusively to the south and west of Pittsburgh it was found that the cost of shipment by rail was actually lower, without the attendant delay and difficulties of water transportation, which included inadequate means of loading and unloading barges and boats.

MISSISSIPPI RIVER AND ITS ANTIQUATED FREIGHT-CARRYING EQUIPMENT

Records show that the Mississippi River system has an all-the-year-round draft of 8 feet from St. Louis to Memphis and of 9 feet from Memphis to New Orleans. From St. Louis north to St. Paul, the draft is 5 or 6 feet that is available for nine months of the year. On August 29, 1917, there was available on the Mississippi, Ohio and Missouri Rivers a nondescript collection of barges and towboats having a weekly tonnage capacity of 20,000 tons, and while serviceable they were not modern or efficient, and under normal conditions would not be satisfactory.

SLOW RAILROAD MOVEMENT ILLUSTRATED

That, during the winter of 1918, the seriousness of the railroad congestion may be illustrated by the situation at Cincinnati, where it was found that it required from three to four weeks for the movement of a carload shipment from Cincinnati to Cleveland, or Toledo, or Detroit, and from five to six weeks to Boston and New York.

Compared with this, it may be stated that the Goodyear Tire and Rubber Company established and maintained an autotruck motor train service for the handling of its high-grade freight between Akron, Ohio, and Boston, covering a distance of 740 miles each way, or a total of 1,480 miles for the round trip in an average of eight days during the entire winter of 1918, and this was accomplished throughout the severest weather in January, with the thermometer often down to twenty degrees below zero.

GENERAL LEONARD WOOD IN RE SLOW RAILROAD MOVEMENT

The record further shows, in support of the slow movement of traffic during said railroad congestion, that General Wood, while in charge of the Southeastern Department during the latter part of 1917, found that it took ten days for freight to move from Atlanta, Ga., to Charleston, S. C., a distance of 300 miles.

THE PORT OF WILMINGTON, N. C., PRACTICALLY PUT OUT OF BUSINESS BY RAILROADS

That on July 9, 1918, in a hearing before the Inland Waterway Committee, at Washington, D. C., regarding inland and coastwise waterway conditions along the Atlantic Coast, Mr. R. A. Parsley, lumber manufacturer of Wilmington, N. C., stated in part as follows:

I speak for a port that has suffered more from the lack of water transportation than any other port of the Atlantic Coast. Years ago, when Wilmington had only ten or twelve feet of water, it was a very, very important port. Now we have twenty-six feet of water from the docks to the sea and we have become a very unimportant port because water traffic has practically departed.

Railroads would contend that because there has been no tar, pitch and turpentine at Wilmington since the war that the port has dried up. The fact

are that the railroads have, since the Civil War, consistently and continuously conspired to dry up the port and they have practically succeeded. Now that the test has come, the railroads have completely fallen down and Wilmington and territory tributary to it has suffered terribly. The southern and the Atlantic coast-line railways are the offending lines and, in addition to destroying the water transportation, they have also prevented eastern and western lines from terminating at Wilmington and building up the port. The Interstate Commerce Commission refused to give Wilmington trunk-line rates ten years ago because unable to show the effect of water competition.

On the other hand, the Clyde Steamship Company, owned by the Southern Railway, fought off all other steamships between New York, Baltimore and other ports and Wilmington. Recently the Baltimore and Carolina Steamship Company took the matter before the Interstate Commerce Commission and the Commission has established rules which it is hoped will remedy some of our former troubles. But the war has interrupted any benefits that might have come from that direction.

Wilmington is 450 miles south of New York and 200 miles south of Norfolk. The rate on grain from the West to the port of Wilmington is 13 cents per hundred higher from Cincinnati, for example, than to New York City, while the rail-line distance is the same to both ports. Again, the freight class rates are lower to New York City than to Wilmington.

Testimony given at said hearing by Mr. Guy Webb, for the Norfolk Chamber of Commerce, is to the effect that the Atlantic port business of the country should be more equally divided between New York City and Norfolk, on the ground that Norfolk is claimed to be sixty-nine miles nearer to Chicago by direct rail-line mileage than New York is, and in order to provide more uniform development and avoid terminal railroad congestion at the metropolis. In response to a question by Commissioner Sanders, he also stated, among other things, that "there is nothing our people would not do to get away from the railroads."

RAILROADS DISCRIMINATE AT PORT CITIES IN DISREGARD OF THEIR POTENTIAL AND ACTUAL WATER COMPETITIVE THEORY

During the said hearing, Hon. John D. McNeill, Mayor of Fayetteville, N. C., stated that Fayetteville is situated on the Cape Fear River, 115 miles from Wilmington, and that it formerly had a big distributing business, but that the railroads destroyed it, and requested the committee to assist in establishing inland waterway transportation in order to make them independent of the railroads. He stated that the Cape Fear River formerly transported thousands of tons of freight, but that this had been taken away by the discriminatory practices of the railroads. He also stated that he is in the flour-milling business and that, for the movement of western wheat from Cincinnati to his mill at Fayetteville, he is forced to pay \$5.20 per ton in railway charges, whereas, to the port of Norfolk, Va., the railway charges are only \$2.40 per ton, and this notwithstanding that, because of the congestion and the unreliability of rail service, he has, during past years, shipped goods from Chicago by water through the Great Lakes to Buffalo, thence down the Erie Canal, thence by sea to Wilmington, and thence by the Cape Fear River to Fayetteville, and received the freight more quickly than he could by rail.

It was further shown by Mr. McNeill that molasses is moved from New Orleans to Norfolk, Va., by the railroads for \$4.80 per ton, but if stopped en route at Fayetteville, N. C., on the same line, in the same direction, and even in the same train, and sold to a dealer at that point, the rate is \$11.80 per ton.

CHARLESTON'S EXPORT BUSINESS RESTRICTED IN INTEREST OF LONG RAILWAY HAULS TO NORTHERN PORTS

Charles H. Dimmick, for the Traffic Bureau of Charleston, S. C., testified at the hearing that the Clyde Steamship Line service had been very severely curtailed in and out of Charleston by its railroad owner; that the Merchants and Miners steamship line between Baltimore and Savannah stopped at Charleston to pick up passengers, but refused freight because of the combined railroad influence being so potent; and that they could not secure any kind of a solution of the difficulty from the Interstate Commerce Commission; that, therefore, the movement of lumber, cement, iron, steel, sugar, and cotton was being seriously retarded for want of efficient and sufficient transportation facilities. He also complained that Charleston does not get the benefit of export service to some world ports, and that cotton and other goods were moved to northern ports for concentration and export instead of being exported directly from the port of Charleston.

TRANSPORTATION ON ALABAMA RIVERS INADEQUATE AND UNABLE TO COMPETE WITH THE RAILROADS

There is also testimony of record on behalf of the Alabama Navigation Association showing that the water transportation and terminal facilities on and along the Warrior, Tombigbee, and Alabama Rivers were wholly inadequate to either compete with the railroads or furnish effective public service, and request was made that the Government take charge and establish an effective waterway transportation service.

JUDGE BRANDIES ON THE NEW ENGLAND SITUATION

Before the annual conference of the National Rivers and Harbors Congress at Washington, D. C., December 9-11, 1914, Hon. Louis Brandies, Justice of the Supreme Court of the United States, in his address, said:

The New Haven succeeded in getting, through combination, practically a monopoly of all the railroads in New England. But the company went much further. It moved on to the water carriers, with the result that the five New England States with ports upon the Atlantic, free to any traffic, had not a single line of steamships between those different States that were not owned or practically controlled by the New Haven. But more striking still is the fact that no one of these five New England States had a single line of steamships to the city of New York, or to the city of Philadelphia, which was not controlled by the New Haven; and the influence of the New Haven extended considerably further south still. * * *

This combination failed because the cost of acquiring the monopoly was very great. It was not merely the cost of buying up these various systems; it was the cost of killing the competition which was not bought up; the cost, for instance, of killing the Enterprise Transportation Company's steamship line, which was built to compete with the New Haven's lines. There was also a cost very much greater than that, greater than the cost which was incident to the buying of competing lines at excessive valuations, or the cost of running steamships at ruinous rates in order to kill a competitor. That was the cost of inefficiency in management, the cost of bad management which had resulted from the attempt of one organization, through one body of men, to run the various concerns. The loss in this experiment was tremendous. The limitation which is put by Providence upon the powers and capacities of the individual man was the greatest cause of the failure which ensued.

REMARKS

It is significant to note, in passing, that the coastwise traffic is controlled in the interest of the railways; that the export traffic through

such ports as Charleston, S. C., and Wilmington, N. C., is practically prevented; and that traffic through the port of Norfolk is restricted in the interest of the railways, which desire to promote long hauls to the ports of Baltimore, Philadelphia, and New York for concentration and export. Incidentally, these railroad restrictive practices are also enforced at several potential water ports on the Pacific Coast, such as Eureka, Monterey, Santa Barbara, and other points where the railroads and the Interstate Commerce Commission have, in the past, refused to accord the same rate advantages that are given to the preferentially selected ports; that, notwithstanding the potential and actual water competition, so-called, about which so much was said in justification of the discriminatory railroad rates applying throughout the Mississippi River Valley, Fayetteville and Wilmington have been denied the benefit of the low rates granted to other ocean ports. Further, in this behalf, it is important to state that it was shown before the Senate Committee hearing on the long-and-short-haul legislation that the railroads maintain uniform rates throughout all territory on or tributary to the Great Lakes and that no long-and-short-haul rates are imposed on the shippers intermediate to said lake ports. It is, therefore, clear that this water competitive theory is a myth which is conveniently used by the railroads and the industrial trusts for the building up of certain favored ports and sections, to the exclusion of other ports having equal waterway possibilities and of the great western and producing sections.

PLEA FOR PROMPT RELIEF

Because of the amply sufficient reasons set forth hereinbefore, we earnestly request that the honorable Congress of the United States promptly take up and grant the relief prayed for by the Intermediate Rate Association, and such other and further relief as the facts may warrant.

ABLE ARTICLE BY HON. C. C. McCHORD AND INSTRUCTIVE DEBATE BEFORE SENATE OCTOBER 1, 1918, BETWEEN SENATOR PITTMAN AND OTHER SENATORS

In addition to, and in support of what has been said hereinbefore regarding the detrimental and, in many cases, ruinous effect on state development of the said monopolistic federal rate regulation, we set forth below extracts from a very ably written article by Hon. C. C. McChord, one of the progressive members of the Interstate Commerce Commission. The article in question was published in the press of the country and, on August 1, 1918, Senator Pittman introduced it in Congress by an able speech on the injurious effects of the present discriminatory rates and practices and, after a strong debate in which the Senator sustained himself interestingly and effectively, the article was printed in the Congressional Record.

Among other things, Mr. Commissioner McChord said:

What is needed in this country is a wider diffusion of manufacturing industries and the local supply of the necessities of life. Products of our factories are distributed throughout the land, but under circumstances of such economic waste as to demand a radical change. In the development of manufacturing, many elements have conspired to confine factories to limited territories or particular cities. There has always been a desire upon the part of our people to locate the factory near the region of supply. As our Western and Southern States began to be developed after the Civil War, the constant effort of the

smaller cities and towns was to secure factories of various kinds. * * During that period, by the payment of large bonuses, or offers of free tax on coal and water, many of them secured the location of factories that gave promise of affording cheap material for home consumption, and a distribution of the surplus to neighboring towns.

MONUMENTS EVIDENCING RUINOUS EFFECTS OF LONG-AND-SHORT-HAUL RATES

Many of these factories proved to be failures, and a ride over the country today discloses crumbling buildings and smokestacks in many towns and villages as grim monuments to the dead hopes of their projectors. Not all of these were properly located; many of them were the result of the dreams of some inventor of a short cut to wealth; but most of them should have survived, and would have done so except that influences were at work that made success impossible. Among the chief of these was the fact that the railroads favored certain manufacturing centers in the way of facilities and rates.

The freight traffic manager's business was to secure tonnage for the particular railway by which he was employed. Long hauls in large lots afforded attractive business that added to the aggregate of the returns to the carrier from his efforts, and led to his preferment by those higher up in the control and management of the road. Competition for business at points reached by several railroads was keen and incessant. The more railroads that served a particular point, the keener the struggle between rival traffic officials for business. For many years previous to 1900, and by many roads until 1906, rebates were paid to secure business to such an extent that officials have frankly admitted in evidence in proceedings before the Interstate Commerce Commission that few carriers pretended to collect more than 80 per cent of the advertised rates on shipments from competitive points. Railroads were built from business centers to business centers. Some reached the objective points by short, direct routes and others by long, indirect routes. The latter, in order to do business at the competitive point, met the rates named by the short line, meanwhile maintaining higher rates at shorter distance points on their own lines. In the same way competition by boats on our inland and coastwise waterways was met by all-rail carriers until transportation by water, so far as our inland rivers are concerned, has been nearly abandoned. Cities and towns along these rivers entitled to enjoy the cheaper water transportation were deprived of the advantage of their location.

The inducement to give the large shipper and all shippers from manufacturing centers an adequate supply of cars, transit privileges, switching arrangements, etc., was ever present, and the force of competition operated in favor of such shippers.

These considerations rendered it impossible for the factory at the small town to compete in the sale of its product with a factory producing the same product at the larger and more favored city. The result was that the factory in the small town ceased to operate and its employees were compelled to seek employment in the centers of production.

POPULATION CONCENTRATED AT INDUSTRIAL CENTERS TO THE DETRIMENT OF THE COUNTRY AT LARGE

The most important matter just now, however, is the part that the railroad should play in the readjustment that must be made in our industrial and economic conditions. As before noted, it has come about that the large part of our manufacturing is done in our cities. The greatest manufacturing cities of the Nation, considering the variety and quantity of production, are Chicago, Ill., and Philadelphia, Pa. Southern New England has developed into a succession of manufacturing cities. Pittsburgh dominates the iron-and-steel industry and controls prices wherever sales may be made in this country, as Chicago dominates and controls the prices of meats and their products. New York City produces immense quantities of ready-made clothing, employing thousands of sweatshops of unsavory surroundings. The result is that workmen and women in largest numbers live under conditions that are not sanitary, wholesome, nor conducive to good morals. This has happened in a country that is less densely populated than any of the great nations of the earth, and where there is room enough for every citizen and resident to enjoy his full share of pure air and sunlight, and to live under conditions conducive to health, morality and happiness. It would also enable him to secure a home at moderate cost, or a

reasonable rental, with an area of ground sufficient to permit him to cultivate a garden where fresh vegetables may be grown for his own use.

Many good people have organized societies, and have expended large sums of money in philanthropic efforts to induce immigrants and others to shun the haunts of their fellows in crowded cities, and seek homes in the South and West, where conditions are wholesome. In this they have met with a measure of success, and thriving communities composed of different nationalities may be found scattered over the land. At the same time, however our cities have continued to increase in population, and living conditions have not improved as a consequence.

There are many considerations that dictate a relocation of our manufacturing industries. In the first place, it costs more to do business in a city than in the country. Land values and costs of construction of plants, taxes, etc., constitute charges that must be met from earnings. It costs more to live in a city than in the country. A lower wage payment in the country than in the city would enable the workman to secure more comforts of life, to clothe his family better, and educate them more adequately. If the factory is located near the raw product, there is saving in transportation costs which will be reflected in net earnings. * * *

WAGE-EARNERS ENTITLED TO COMPENSATING ADVANTAGE

It is certain that workmen who have had opportunity to enjoy life as the result of adequate pay are not going to consent to, if they can avoid it, any reduction in their wage scale unless there are compensating benefits. It is equally certain that the era of extremely high prices for the necessities of life will not continue during times of peace. The great class of nonproducers represented by clerks in offices and stores, salaried men in every calling, employees of public utilities, and the like, cannot long continue to pay ever-increasing living costs except that they, too, receive further material increases in rates of pay. * * *

If wage scales are to be readjusted downward to meet conditions in times of peace, the wider diffusion of factories presents an alluring way out. What the workman desires and what he has a right to demand, is opportunity to live in comfort. Reduction in the rate of his daily wage means, as he now sees it, lessened opportunities to secure for himself and his family those necessities which go to make comfort in daily life. In most any country town of 1,500 or more population that might be named in the West or the South, there is opportunity to live better and enjoy more of the real comforts of life, at materially lower wages, than even an approach to the same state of livelihood can be secured in any congested manufacturing center. * * *

In the country there are pure air and sunlight. The surroundings are clean, sanitary and moral. In such an atmosphere, a workman can easily rear a family of sturdy boys and girls, and live a life of peace and happiness impossible for him to live in the crowded and unwholesome conditions of congested centers. In the country he is afforded opportunity to buy products of the soil first-handed for his table at reasonable prices, and the admirable schools and religious institutions now in existence everywhere insure to his children every chance to lay the foundation of good citizenship.

WATER COMPETITION SPASMODIC SINCE 1880

Prior to about the year 1880, our inland waterways had an important part in transporting the commerce of the Nation. Within a decade from 1880, many boat lines disappeared from all rivers, and today only an insignificant percentage of freight tonnage is transported by water anywhere in the country. The boat lines are either absorbed by railroads, and their operations abandoned, or rail carriers made rates for freight so low to competitive boat-line points as to make the business unprofitable to the boat line. Spasmodic efforts to rehabilitate water transportation have been made from time to time in recent years by individuals or communities, but they have not met with success because of continued opposition of railroad interests. There never has been any good reason, and there is none now, why our rivers, on which the Federal Government has expended millions of dollars of the public money, should not be brought into transportation service.

The National Shipping Board is rapidly building up our merchant marine on such a scale as to call for the admiration of all maritime nations. A portion of the energy of this admirable agency will doubtless be intensified, as it should

be, in the building of steamboats and barges to move across the waters of our inland streams and lakes, as well as the bays and oceans of our coast line.

THE OPPORTUNITY TO LOCATE AND DO A MANUFACTURING BUSINESS SHOULD BE AFFORDED AT ANY POINT WHERE RESOURCES AND CONSUMPTION JUSTIFY

It seems to be conceded by every one that, no matter what is done with respect to the great transportation systems of the country after the war is over that certain condemned practices, and the unbridled competition of past years is at an end, and that by some means the carriers of the future will be under such regulations as will insure the largest and most effective use of the facilities they have for the conduct of the transportation business of the land without favor to one shipper or prejudice to another. * * *

Thoughtful study should now be given to the equalization of rates for freight transportation, and as to whether higher rates should for the future be permitted for shorter than for longer distances over the same line or route, the shorter being included within the longer distance, and whether combination of rates and transit privileges that now unduly favor certain jobbing and junction points, should be canceled and reasonable through rates established to all points. Transportation by boat on our rivers and coast lines should be encouraged to relieve rail carriers at congested cities and ports. Steps have already been taken under federal control to divert traffic from congested North Atlantic ports to those of the South and on the Gulf of Mexico. Rates should be made and facilities provided so that each port of the United States, from Galveston, Texas, to Bangor, Maine, should receive its share of traffic under the most economical transportation conditions. Relatively the same facilities should be furnished the factory that ships one carload a day as the one that ships ten or more carloads. The opportunity to do a manufacturing business at a profit should be afforded at any point in the country. The supply of raw materials and the possible field of consumption will dictate the location.

HIGH COST OF LAND AND BUILDINGS WHICH ENTER INTO PRICES RESULTS FROM LOCATING INDUSTRY IN CONGESTED DISTRICTS

There are other matters which may be necessary to consider in connection with the possible reconstruction here indicated. One of them is the opportunity for financial support to industrial enterprises. In the past many factories have been located in already congested districts at the behest of those who furnished the financial backing. In this way, high-priced land was disposed of and costly buildings erected which enhanced the value of vacant adjacent lands. Interlocking directors of banks, railroads and factories have doubtless influenced the formation and perpetuation of conditions that have prevailed and to some extent still prevail. This matter is now largely behind us and should present no insuperable barrier in the future to the wider distribution of manufacturing establishments.

A new era is at hand. The carriers of the country for the future are to serve the public interests. The dictates of selfishness and private greed that have for so long a time controlled the policy and management of our great transportation systems no longer constitute the guide for action. In a time like this, when readjustment of industrial and economic conditions is imperative, the railroad must do their part to the end that there may be decided progress on the highway that leads to equality of opportunity for all, and to ultimate national greatness and individual contentment.

STATES' RIGHTS

During the past year the trunk-line railways of the country have been in the hands of the Government for the purpose of war-emergency operation and control, and under existing law may be retained by the Government for the period of twenty-one months following the close of the war. On December 28, 1917, the President took over the possession, use, control and operation of all railroads of the country engaged in general transportation, including water lines, and provision was made by Congress for the operation of these transportation systems while under federal control and for a just compensation of their owners in an Act approved March 21, 1918. Under this Act, all railroad

were originally taken over by the Government, but later the independently operated short-line railways were released from such control and only great trunk-line railroads and their owned or controlled "short-line" railroads were retained by the Government for war-emergency operation.

Extraordinary considerations of patriotism, and an earnest desire to subordinate everything to a successful winning of the war, induced all State Railroad Commissions, during the war period, to make every effort possible to cooperate with the Government and, in fact, to offer their services in any capacity in which they might be useful in administering the railway affairs of the country. But, in this behalf, we regret to state that our tenders were not accepted by the Railroad Administration and that the subordinate work has been turned over to regional committees made up of railway traffic managers and representatives of large industrial and commercial centers.

STATE RAILROAD COMMISSIONS' OFFER OF COOPERATION REFUSED

While the question of exercising even the smallest jurisdiction over local matters within their respective States has been challenged by the Railroad Administration, the State Railroad Commissioners have not felt that it would be right to antagonize or make any orders during the war emergency that would conflict with those of the Railroad Administration and, therefore, in lieu of the assertion of their lawful authority, they have, as before stated, endeavored to cooperate in every way possible with the Government. In this behalf, two conferences were held with the Director-General—one in January and one in June. Thirty States, including Nevada, were represented at the June conference and, while recognizing the war power of the President to centralize full power and control of the railroads in the hands of the Federal Government as a war measure, it was strongly urged that we were all interested in preserving our States' rights in so far as possible to do so, and this was reinforced by bringing to the attention of the Director-General a comparison of the Railroad Administration organization with that of various other centralized federal departments which have been created for war-emergency purposes. For example, it was shown that at the start of the war it was necessary to put into operation the selective draft for the creation of a National Army, the effect of which reached into every home and, in fact, into every line of business in the country, but that, in giving it force and effect, General Crowder brought into the administration of the work and to the aid of the National Government the officers of all the subdivisions of government—state, county and municipal; likewise, that the same plan was followed in the organization of both the Fuel and the Food Administrations. Further, it was shown that this plan of organization had provided the necessary centralization of power in the Federal Government for war purposes and that it had been done in such a manner as to cause as little usurpation as possible of the popular right of local self-government by the people throughout the various States; that it permitted them to actively participate in the selection of the officers of the local federal boards and, therefore, to have their affairs administered through the medium of their own officials, who came from among them and who understood and could make clear to the centralized departments at Washington the peculiar circumstances and conditions within each State and subdi-

vision thereof; and, in exemplification of this statement, it was shown that the Federal Fuel Administration permitted the State Fuel Administrators to prescribe the local regulations and fix the prices within the respective States, subject only to the supervision of the Federal Department.

This was the plan of reasonable and effective cooperation proposed at said conference, from which it follows, of course, that the State Commissions were to be authorized to act as branches of the Federal Railroad Administration for each State during the period of the war. But, as stated above, our offers in this behalf have been wholly disregarded and, in lieu thereof, the organization is exclusively federalized and the States have no voice whatever in the administration of their own affairs.

RAILROAD ADMINISTRATION INCREASES RATES

During its short existence, the Railroad Administration has set aside state-made rates and substituted therefor very much higher rates, by promulgating a 25-per-cent horizontal increase in freight rates, while passenger fares were raised in varying degrees upward to 50 per cent on June 25, 1918. It has also increased railway express charges approximately twenty-five million dollars. These extraordinary rate increases will produce an increase in the annual revenues ranging from eight hundred million to one billion dollars over the earnings of previous years.

As an offset to these increased revenues, however, it is to be understood that the cost of railway materials and supplies has been and is very high as a result of the war emergency; that the wages of railroad employees have been increased about six hundred and thirty-five millions of dollars per annum over the wages formerly received, and that, therefore, the total operating expenses of the railways for the year 1918 will be unprecedentedly high.

RAILROAD COMMISSION WILL EXERCISE JURISDICTION

The war having closed, the various State Railroad Commissioners of the Nation, represented in annual conference at Washington, November 12 to 14, 1918, have, through the medium of their National Association of Railway Commissioners, decided to assert their jurisdiction and to henceforth exercise their sovereign power over matters relating to state rates and services. In this behalf the following resolution was unanimously adopted by the association:

Resolved, That in the opinion of the National Association of Railway and Utilities Commissioners, met in annual convention during the week of the close of the war, it is desirable that suitable action should forthwith be taken by the President, or Director-General of Railroads, to recognize the full and unimpaired authority of the States over intrastate rates, service and facilities of the carrier properties now under federal control; but that in any event it is the duty of each State to exercise and maintain its constitutional and statutory authority as to such rates, service and facilities to the extent which it may deem the public interest demands, taking into account, as factors in any determination reached, the present status of the railroads under federal control, the responsibility of the federal treasury for any deficiencies in revenue and contractual return, and the desirability of achieving results by friendly cooperation wherever possible; and be it further

Resolved, That in the opinion of this Association, consideration ought to be given, by the President and Congress, to legislation defining the future status of the railroads; and the association is emphatically of the opinion that any plan for the future operation of the railroads should fully safeguard the powers of local tribunals, responsible to the people of the several States, with respect to rates, service, and facilities essentially intrastate in character.

THE FEDERAL CONTROL ACT

Federal Control Act, approved March 21, 1918, provides that the carriers, while under federal control, shall be "subject to all laws and regulations as common carriers, whether arising under state or federal law, and at common law, except in so far as may be inconsistent with the provisions of this Act, or any other Act applicable to such federal control, or with any order of the President."

It was also provided that nothing in the Act should be construed "to repeal, impair, or affect existing laws or powers of the States relating to taxation or the lawful police regulations of the several States, except wherein such laws, powers, or regulations may affect the transportation of troops, war materials, government supplies, or the sale of stocks and bonds."

It was also stated that the rights of the States were fully preserved and that this was the legislative intent and the view that was entertained by state and federal officers during the hearings and consideration of the legislation. This position prior to its final passage, is made clear by the following statements from the testimony of Director-General McAdoo before the Senate and House Committees on Interstate Commerce:

DIRECTOR-GENERAL McADOO ON STATE COMMISSIONS

What stands today the state commissions are exercising precisely their same functions. The Interstate Commerce Commission is exercising its same functions. For my own part, I believe as little disturbance should be made as possible in those matters. Yet at the same time it is very essential that the President should exercise his full powers as the public necessity requires. * * * I told the State Commissioners who called on me the other day, the ordinary procedure will continue to be observed; that the advice and suggestion assistance of these commissions could be made of great value in the management of the railroads; but the purpose of the President was and is not to exercise any power he possesses to override the authority of the Interstate Commerce Commission and various State Commissions except in cases where it is clearly necessary to do so to meet the war emergencies or to serve the public interest. * * * Why, it would be foolish for the Federal Government to make to pass upon local questions; for instance, laying a sidetrack to an industrial plant, or other such affairs. For my part, I am willing that State Commissions shall continue to exercise their powers. They are not going to be interfered with at any time except in cases where it is clearly necessary for the public interest and for the purposes of the war. Their powers should not be used to override the judgment of the Federal Government as to what the public necessity may be in the management and control of these railroads. As to intrastate rates, I think that the State Commissions ought to continue to consider such questions as they arise. Questions affecting local conditions arising up from time to time, and they ought to hear them and pass upon them and so long as their views and judgment do not run counter to the common interest they will be regarded as accepted just as heretofore. I had a conference with, I think, about twenty representatives of the State Commissions recently, and I told them that I thought they ought to go forward just as they have in the past and in fact the President's proclamation so provides—and hear cases and exercise their powers as they have heretofore done; always, of course, with the understanding that the President has the power to override any decision they may make when he thinks it necessary to do so in the public interest.

Now, as to the rate-making power. I think the President undoubtedly has the power to control rates during the time of federal possession under the present law. I think, on the other hand, that that power ought not to be exercised, and I am sure it will not be exercised except in such cases as may be necessary in the public interest. I think it will be very unwise for the Federal Government to undertake through the Director-General of Railroads, who merely represents the President in this control, to pass upon all the rates in the country either *de novo* or as questions may arise concerning them. I think that the agency of the Interstate Commerce Commission ought to be employed and that it ought to hear these questions from time to time as the public interests require, and that the views of the Interstate Commerce Commission or their judgment as to what ought to be done in the circumstances ought to prevail, and I think would undoubtedly be permitted to prevail except in so far as it might be wise for the President to modify or change them. * * * Now, that applies to interstate rates. As to intrastate rates, I think that the State Commissions ought to continue to consider such questions as they arise.

Let me say that the regulation of rates is a very complicated question. We have a fabric built and interwoven by the Interstate Commerce Commission and the various State Commissions over a period of many years. It is not only a question of the amount of the rate, but of the effect of the rate upon different communities. Those rates have relation to the economic status and the industrial activities of the country. I think that any man who undertook lightly to disturb that rate structure would be doing a very foolish thing, and naturally the President would not undertake to exercise the power he has under the law to destroy or disturb rates lightly or unnecessarily.

SENATOR CHARLES E. TOWNSEND'S OPINION ON THE EFFECT OF THE LEGISLATION

However, after this legislation had passed both the Senate and the House and had gone into conference, some very vital changes were made, the possible effect of which may be best explained by quoting from the speech of Senator Charles E. Townsend of Michigan, a member of the joint conference committee on the bill as passed by the Senate and the House, made March 13, 1918, in explanation of why he would vote against the final adoption of the conference report.

The Senator has, for many years, been a member of the House and Senate Committees on Interstate Commerce and is, therefore, a nationwide authority on the question of railway regulation. Referring to the changes which were made from the original draft of the bill, the Senator said:

Some of these additions were very objectionable. For instance, section ten about which we have been in discussion and which the conference committee were required to revise, contained several provisions which, I thought, were not only unnecessary as war measures, but were absolutely subversive of the principles of good government as they affect transportation. Section ten of the bill was a subject of controversy. The first paragraph is as follows:

That the carriers, while under federal control shall, in so far as it is not inconsistent therewith, or with the provisions of this Act, or any other Act applicable to such federal control, or with any order of the President, be subject to all laws and liabilities as common carriers, whether arising under federal or state statutes or at common law, and suits may be brought—

And so forth.

The words "or with any order of the President" were imputed into the bill and they had no object known to the committee. They were not necessary for the purposes of the paragraph. * * * There could be no possible reason for inserting this language so far as the effective control of the railroads is concerned. That specific power has not been granted the President up to the present time and yet the Director-General has been operating the railroads for three months and no complaint of lack of power has been mentioned. The author of

this provision probably had in mind what purpose it might serve, but it will not be one necessary to the operation of the railroads for war purposes. * * *

And, to the same effect:

It has seemed desirable to somebody that we should not only confer direct power to do the things that were in mind, but that we should convey blanket powers. I presume hereafter that some of the Senators who voted for that provision [referring to blanket power conferred by section nine] will complain because of the unusual things that will be done under the authority of this Act. I shall not be surprised if this proposed law be used as the authority for doing many things by the Director-General about which no Senator has yet thought.

It conveys authority to rape the Constitution, set aside state laws, nullify state rights, and to send to prison offenders against the *ipse dixit* of the Director-General.

I have endeavored to hold this bill to its original declared objects, but I have failed. It is a dangerous thing to confer arbitrary power at any time. Sometimes it is necessary, but it is never necessary for a republic to confer general blanket powers upon any man, however wise.

POSITION OF STATE COMMISSIONS REGARDING SOVEREIGN POWER OF THE STATES

Commenting on the construction of the Federal Control Act, relating to the reserve powers of the State, the War Committee of the National Association of Railway and Utilities Commissioners made the following report at said conference, which was unanimously adopted:

The language of the Federal Control Act leads to the inference that Congress did not intend to reduce state regulation to a nullity, but wished to preserve it, so far as it did not interfere in any proximate and tangible way with the transportation of troops and munitions, and that this regulation which it sought to preserve included authority over intrastate rates, for the regulation of rates is undoubtedly an exercise of police powers. The interpretation placed upon the Act by the Railroad Administration, however, has apparently been very different. We say "apparently" because no authoritative and comprehensive statement upon this subject has been made either by the Director-General or by his immediate legal advisers. In practice it has been assumed by the Railroad Administration that the President, acting through the Director-General, has power to initiate intrastate as well as interstate rates, regardless of the provisions of state statutes, and that the State Commissions have no power over rates so initiated. They have been filed with the State Commissions "for information only" and not in accordance with state statutory provisions. In the case of service, the practice has varied, but it has seemed to be the assumption that the power of the Director-General over service and accommodations is complete and that the State Commissions may exercise authority, if at all, on sufferance only. In certain instances their authority has been directly challenged, even in matters of purely local concern. Recently, for example, representatives of the Illinois Central Railroad under federal control have formally declared that the Board of Railroad Commissioners of Iowa "has no power to render an order effective in any way affecting the property in any manner connected with the use and operation" of that railroad, and that all its property "is in the possession and under the control of the United States Government; that said control and possession are exclusive of all other controls and possession."

Confronted by this situation it has been the belief of this committee that the State Commissions ought not to embarrass the Government, at least while the war continued, by litigation, but should seek the adjustment of differences by friendly negotiation, and endeavor in every way, regardless of jurisdictional questions, to aid in making federal operation a success. We have acted from the beginning upon this belief, and it is our information that this has been very generally the attitude of the State Commissions.

You are familiar with what has taken place, and only a brief reminder is necessary. On December 27, 1917, the president of this association wrote the Director-General tendering the hearty cooperation of the State Commissions and stating that their organizations were at his command for the service of the country. This was followed by a conference at Washington on January 16,

and by a further conference at White Sulphur Springs on June 6, at which many as thirty States were represented. [Among which Nevada was represented by Commissioner J. F. Shaughnessy.] The Director-General was to that the State Commissions wished to be of all possible assistance, but were perplexed by doubt and uncertainty; that shippers and the general public were calling upon them for relief, while many railroad officials challenged their jurisdiction. The following paragraph from the resolutions then presented indicated the remedy suggested:

The State Commissions do not desire to work at cross-purposes with the National Railroad Administration. We know that in unity there is strength and we want to help present a common front in this hour of need. We believe that most of the difficulties which now portend would be swept away if you would issue a general order or in some other way set forth clearly and definitely your conception of the relationship between the National Railroad Administration and the State Commissions. We believe that a definite plan can be worked out under which, waiving for the time bothersome questions of jurisdiction, the States will know definitely your views on what they should do and what they should not do. While we cannot prevent any passenger or shipper from raising issues of jurisdiction, and while we cannot bind even the commissions, we can say to you that such a plan, worked out between you and ourselves and definitely announced by you, would undoubtedly receive the hearty and loyal support of most of the State Commissions and would go far to prevent questions of jurisdiction being raised from other sources.

Subsequently, at the Director-General's recommendation, this matter was taken up by the War Committee with Judge Prouty of his staff and a definite draft of a general order on the plan was prepared.

Up to the present time, neither this general order nor any order with similar intent has been issued by the Director-General. But even if one should be issued, while the situation would be clarified and improved, there would still be need for further action, at least now that the war is over. There will no longer be the same need for concentration under a single leadership upon one end, regardless of all others, and the powers and duties of the State Commissions with reference to the railroads ought not, we think, to be dependent either upon the suzerainty of the Director-General, nor, so far as it can be reasonably avoided, upon interpretation by the courts of ambiguous provisions after prolonged litigation. Undoubtedly the question could be raised in the courts, but there are many who believe that the Railroad Administration has gone, even in time of war, beyond constitutional right in limiting state regulation, and the power of the Federal Government over intrastate matters is certainly far more restricted in time of peace. But, without waiver of legal rights, it is desirable that the subject should receive renewed consideration by Congress. In other words, if federal control is to continue after the war ends—and we assume that it will, for some time, at least—the issue ought to be faced squarely, and the subject should be a more definite determination by Congress than is contained in the present Act, of the status of state regulation with reference to such control.

From the experience already gained, it seems to your committee that the following conclusions, among others, may fairly be drawn:

(1) The operation of a national system of railroads in the United States is not like the conduct of an ordinary business—if for no other reasons, because of tremendous size. There is danger in too great centralization of control and the creation of a bureaucracy too far removed from the immediate influence of public opinion. However well-intentioned they may be, the chief executive officers of such a system cannot have any adequate knowledge or understanding of local conditions and problems, and the inevitable tendency is to arbitrary action and the development of rules superficially uniform, but often discriminatory and unfair in their application to particular cases.

(2) While this difficulty may be overcome in some measure by delegation of authority, subordinates are responsible to the man who appoints them and tend in the last analysis, to rely upon what they believe to be his wishes rather than upon independent judgment. This has been well illustrated in the case of the present federal control. The attempt has been made to delegate authority over rate controversies to regional and district committees, but, in its actual work-

ing, this plan has caused dissatisfaction. A common result has been confusion, delay and final reference of the dispute to the central authorities in Washington.

(3) Under normal peace conditions the people of this country will not be satisfied, we believe, with a mere opportunity to bring their complaints in regard to rates and service before railroad executive officers who can refuse public hearings, if they so desire, and say "Yes" or "No," without giving their reasons, subject to appeal to Washington which, in most cases, is a long distance away.

(4) It is our belief that local tribunals of semijudicial character for the consideration of local questions will be necessary to a successful and democratic administration of the railroad properties, even under federal control, and that State Commissions are well suited to the purpose. A similar result might, it is true, be secured by the appointment of regional Federal Commissions; but tribunals directly responsible to the local communities will be far more satisfactory in the long run. They will offset bureaucratic tendencies, and introduce an element of home rule which the size of the country and the complexity of its conditions make essential.

(5) Railroad regulation started with the States, and every advance in the law has been prompted by and secured as the result of the experience of local commissions. Disregarding the past, however, we believe they have, since federal control was established, amply demonstrated their usefulness to the public because of their intimate acquaintance with local conditions. Even before the Act of Congress was passed, the widespread publicity given by the secretary of this committee to the proposed car-spotting charge at industrial tracks resulted in its abandonment, and influenced Congress in reserving to the Interstate Commerce Commission power to revise rates upon complaint. Activity of State Commissions after General Order No. 28 was issued resulted in a speedy elimination of a provision which would, by the immediate raising of all intrastate rates to the interstate basis, have inflicted great injury upon large sections of the country, and also resulted in broad changes in the minimum charge provisions. Their continued activity has since resulted in other important modifications, and many complaints in which they have interested themselves are now pending.

(6) The need for local public tribunals is accentuated by the fact that the men now operating the railroads under federal control, aside from the Director-General, are very largely the men who operated them under private control. Broadly speaking, the situation could not well be different, but, in view of the training and acquired prejudices of these men and the fact that many of them believe that federal control will be temporary, the desirability of preserving established means of public regulation is evident. At the time when the war began they were united in an endeavor practically to eliminate the States from the field of railroad regulation. It was both necessary and desirable to place the operating management of the roads in the hands of experienced railroad men, but policy-determining power is a different matter. Men who for years have viewed railroad policy in the light of railroad interest do not overnight become satisfactory exponents of the public interest. It is for this reason that the War Committee has urged larger representation of the public upon the Director-General's staff, and it is equally a reason for maintaining state regulation.

(7) This need is further emphasized by the fact that the present Railroad Administration has shown a tendency to go far beyond immediate war purposes in its conduct of railroad affairs. It is considering and to some extent has already introduced radical and far-reaching changes in operation, management and rate structure. While such changes may prove desirable, it is clear that they require most careful consideration and that State Commissions, because of their special knowledge and experience, can be of great value in this connection. As this committee pointed out in a letter to the Director-General, however imperfect the old rate structure may have been, it was upon this structure that the business of the country has developed, and sudden or violent changes are likely to do more harm than good.

(8) Finally it may be said that federal control does not remove the need, upon general grounds, of a coordinate but independent system of public supervision. One of the dangers of public operation of utilities is that it may be subject to political or financial abuse, involving waste, graft and inefficiency. This danger is more likely to develop in time of peace than in time of war, and

the only known preventive is eternal vigilance. The value of separate state regulation in this respect is obvious.

Stating the situation concisely, while a federal control of railroads, which excludes local regulation may, perhaps, be tolerated in war-time, it is neither expedient nor wise in time of peace. This view is based upon the merits of the question, without regard to any constitutional right which the States may, and probably do, have to regulate commerce within their own borders even when carried on under federal auspices.

So far as service and accommodations are concerned, we believe that the proposition admits of no reasonable dispute. It surely is unwise to leave solely to the discretion of an organization centering at and responsible to Washington the operation of local passenger trains, the establishment, maintenance and sanitation of station facilities, the investigation of accidents, the protection of railroad crossings, the provision of spur-tracks and other matters affecting local service, safety and equipment. We know of no way in which adequate consideration can be given to local conditions, and the time and rights of the public protected, unless independent local tribunals like the State Commissions are permitted to retain the same direct authority in dealing with such matters which they have exercised for many years past. The idea, apparently held in some quarters, that this problem can be met by the establishment of a central bureau at Washington is manifestly ill conceived. Complaints cannot be handled satisfactorily by long-range correspondence. One of the most valuable features of State Commission work has been the informal adjustment of innumerable disputes by personal investigation and direct dealing with the parties.

The same may be said of general supervision exercised over accounts, expenditures and methods of administration. Publicity is a cure for many evils, and the mere fact that a government bureaucracy is substituted for private management does not make such publicity any the less desirable. If State Commissions, independently appointed, are given general powers of investigation and supervision over accounts and operation, it will be a safeguard against the abuse of public management which so many fear, and a direct incentive to the conduct of affairs which will in other respects endure the light of day.

In the realm of rates there is more opportunity for dispute. One of the main themes of the railroad representatives who united last year in an appeal to the Newlands committee for the practical elimination of state regulation was the confusion caused by the conflict between interstate and intrastate rates; and the problem presented by the so-called "Shreveport Cases" has been recognized and considered by this association. Clearly, more uniformity, greater concentration and better cooperation in the treatment of rate questions are desirable than have prevailed in the past. On the other hand, we think it equally clear that the knowledge and experience gained by the State Commissions in many years of dealing with these questions are valuable assets which ought not to be lost to the country under either private or federal control. Their value has been demonstrated time and again in practice during the past few months.

Your committee has no hesitation in saying that under federal control, the State Commissions should possess the right of review over intrastate rates. In the absence of time and unnecessary conflict of treatment can be avoided in important cases by friendly cooperation between the state and federal regulatory bodies, by the making of a joint record, and by conference prior to final decision. * * *

Summing up what has been said above, the Special War Committee believes that this association, if federal control is to be continued, should ask Congress to determine more definitely the relation which state regulation should bear to such control, this request being made, of course, without even implied waiver of any constitutional right. In our opinion, it is desirable in the public interest that the State Commissions should possess, under federal control, substantially the same authority over service and rates and the same general powers of supervision and investigation which they have exercised under private railroad ownership. We believe that these recommendations are not inconsistent with the intent of Congress at the time when the existing Act was passed. Action of the kind suggested is preferable to the litigation which seems likely to result if it is not secured. When the war emergency passes, however, it is to be assumed that each State Commission will, in any event, exercise such jurisdiction as it believes that it possesses.

Regardless of these questions, we further strongly urge the State Commissions to do everything in their power to help the Railroad Administration in the successful operation of the railroad properties, and to help shippers and the general

public to secure proper adjustments of reasonable complaints. They should respond promptly and frankly to requests for information which the Railroad Administration may make and, upon their own initiative, furnish further suggestions in regard to the operation or improvement of the properties which the public interest may seem to demand. In the case of shippers, we believe that the commissions should continue their activity in investigating changes in rates, interstate as well as intrastate, and in endeavoring to secure reasonable adjustments. In particular, we recommend thorough consideration of the tentative class-rate scales for the different sections of the country which have been prepared by the Railroad Administration, and which have been or are to be sent to the Interstate Commerce Commission and to the State Commissions for criticism and suggestions. This is an exceedingly important matter. While it is true that railroad rates often seem illogical and crudely complex and inconsistent, too bold surgical treatment of such imperfections is likely to produce more ills than it cures, and cautious consideration is peculiarly desirable.

Whether or not federal control should continue even beyond the time specified in the present Act, or, if not, what alternative plan should replace it, are questions which lie, in our judgment, beyond the province of the Special War Committee. They seem certain to provoke widespread controversy, and the State Commissions should prepare to aid Congress in their consideration. The alternatives seem likely to be the continuation of federal control in its present or some modified form; the resumption by the carriers of their former status unchanged; or some midway plan, which we understand owners of their securities are formulating, for the creation of regional railroad systems under federal charter, with private management, but subject to a centralized and comprehensive system of public regulation accompanied by some public guarantee of a minimum return on securities. In order that the State Commissions may be informed and in a position to act, we recommend that either the executive committee of this association or a special reconstruction committee be directed to keep in touch with the situation as it develops, with power to advise the commissions fully and to represent them before Congress or other tribunals in the discussion of these questions when so authorized.

REPEAL ANTITRUST LAW AND PROVIDE FOR UNIFIED RAILWAY OPERATION, UNDER PRESENT CHARTER PROVISIONS

Supplementing the aforesaid, and with particular reference to the changes which are under consideration by Congress, we earnestly recommend that adequate provision, including the repeal of the antitrust laws in their application to the railways should be made, whereby the railways of the Nation may be privately operated, either as one system or as regional systems. This, in order that the benefits of the present unified operation of railways may be retained, and also in order adequately to provide for the weaker lines which always have difficulty in meeting their financial obligations without rate increases that are not needed by the stronger lines, and, finally, to enable such system or systems to carry necessary betterments already built or to be built into new territory until the country served becomes sufficiently developed to make the investment profitable. But, in perfecting this arrangement, it should be specifically provided that all of the railway corporations making up these merged regional systems, or nation-wide system, shall remain subject to their charter obligations to the various States in all matters relating to taxation, rates and services.

PUBLICITY CAMPAIGN BY FINANCIAL, INDUSTRIAL, AND RAILWAY INTERESTS

For a number of years past, an insidious propaganda has been carried on by the railways and the large industrial and financial interests on behalf of the centralization of opportunity, population, industry and wealth at comparatively few rate-favored points, to the exclusion of

the great producing sections of the country, and also the centralization of the power of regulation in the hands of the federal tribunals to the exclusion and annulment of state jurisdiction and rate regulation which have been prescribed by the State Legislatures and Commissions. In this behalf, the States have been sadly lacking in the matter of publicity on the state side of the question, whereas the railway, industrial and financial interests of the country have their side of the question ably presented before the public through the medium of the newspapers and magazines at all times. It was fair to assume that, at least during the war, while the railroads were in the hands of the Government, this propaganda would have been put to one side for the more important and patriotic business of winning the war, but we regret to state that this is not the fact. On the contrary, the Wall-Street bankers are still carrying forward their antirailroad commission propaganda, and, at the same time, endeavoring to shield from censure any and all shortcomings for which the railroads may have been responsible in the past. Excerpts from speeches and banking pamphlets which are published and distributed broadcast from Wall Street, will serve to indicate the direction in which they are endeavoring to mold public opinion.

In this behalf, there was introduced before the Newlands Committee at Washington, D. C., on March 22, 1917, an excerpt from a speech by Mr. John Muir, a Wall-Street stockbroker, which address had been delivered before the Central States Conference on Rail and Water Transportation at Evanston, Ind., December 14, 1916. Speaking for railway investors, Mr. Muir said:

The investors, 600,000 strong, the real owners of the properties, scattered all over this country, having an immense power vested in them, unorganized are unable to come forward with the combined voice of even a paltry dozen. They are uneasy. They chafe. They hesitate. They ask the question, How about future investments in railroads torn by dissension between executives and employees?

They finally evolve this thought: The executives of the road represent us and, in the main, do it satisfactorily: but owing to the fact that there is a prejudice against them in Congress, in the commissions, and in the mind of the public, they can't in their official capacity exert as much influence in certain fields as we could if we should act for ourselves independently. Let us get together, and let us, the owners of the roads, show to Congress and the commissions that political influence and voting power are not wholly confined to shippers and the four brotherhoods.

After reading these remarks into the record in connection with a cross-examination which he was conducting, Hon. T. S. Sims, a member of the Newlands Committee, said:

That is Mr. Muir, who is the chairman of this Railway Investors' League. He is speaking as the chairman of an organization to let the country know that the railroads and their owners have political influence and voting power.

Now, I am not criticizing that. I think that any person who has any property that may be affected adversely by legislation, either national or state or county or city, has a right to present the facts in relation to the property in which he is interested. But, as a matter of course, we Representatives here must represent what our constituents favor. If we do not we will cease to represent them. So this political movement is started for the purpose, not to affect this committee—this committee was already selected and was at work when this address was presented and when this organization was formed—but, to use a plain, common, everyday expression, to bring a back-fire upon the Representatives, so that if there are those here now who do not voice the same sentiment and are not willing to legislate in that direction—in the direction which the members of this organization desire—they will be sure to replace

them with those who will. They have a right to do that; but I think we ought to look at this movement as it really is, and which appears to be an attempt to educate the entire people of this country, with the advantage altogether on the side of the railroads, because they have the means and the opportunity and the experts with which to do it.

Now being a nonexpert, and about as "non" as you can find, and representing a constituency which, no doubt, is reading a great deal of this back-fire literature, I am going to try to get all the information I can.

THAT GOOD, SUBSTANTIAL 25-PER-CENT INCREASE

To the same effect, there is set forth below an excerpt from a pamphlet published in July, 1918, by Louis E. Pearson, chairman of the board of the Irving National Bank of New York City, wherein he states:

Is it imaginable that the freight congestion with which we in New York are so familiar and which has so impeded the progress of business in all parts of the country and even the progress of the war, would have existed if during recent years the facilities concerned had been allowed to operate and develop under normal business conditions?

Government, expressed either in commissions or otherwise, appears to have been so zealous, in protecting the public from what they considered exorbitant rates, as to deprive the railroads and related facilities of the income absolutely necessary in making the business showing which would attract investment. As a result, the funds required in making necessary extensions and in keeping equipment in proper condition and in meeting a vastly increased cost in labor and materials have not been forthcoming, and the very interests which were so zealously protected by the Government in its system of regulation, the business interests of the country, have been the heaviest losers and the greatest sufferers.

But a rate increase has been ordered by the Director-General of Railroads, a good substantial increase of 25 per cent or thereabouts. This increase is necessary, of course. Nobody questions the necessity of it. The war must be won, and, in order to do our part in its winning, transportation facilities must be maintained at a properly high condition of efficiency. Of course, war is a merciless taskmaster and an extravagant spender, but is it imaginable that this 25-per-cent increase would have been required if the war had found these railroads operating within even 25 per cent of the efficiency required by the proper purposes of peace?

All railway and public-utility commissions understand how vulnerable these statements are, but the public at large does not. The Wall-Street banker in question pursues the usual line of attack upon the commissions which emanates from that source and holds them responsible for the war congestion and the breakdown of the railways under private management. On the other hand, it is in effect contended that the railway financial and managerial policy was perfect; that it made no mistakes, miscalculations or omissions and could do no wrong in the matter of unregulated expenditures for standards of track and equipment that were wasteful and inefficient—and that the business interests of the country have been heavy losers and sufferers because the railroads were unable to keep their cumbersome equipment in condition without an increase in rates, which the commissions denied.

It is generally conceded that the railroads and their facilities were adequate and that this was not the cause of the freight congestion at New York and near-by Atlantic ports. In fact, it was very largely due to a lack of elevators and warehouses at New York and the effort which was made to crowd the bulk of the export traffic of the country through the ports surrounding New York City, as if through the neck of a bottle, instead of distributing it through the ports of Norfolk,

Wilmington, Charleston, New Orleans, Galveston, and others, and especially to the lack of shipping facilities to take the freight away and expedite the prompt unloading of cars.

In this connection, we are sure we cannot recall having heard one of these Wall-Street champions of "sufficient railway income to make investments attractive" advocate the building up of the merchant marine prior to the declaration of war. On the contrary, there was opposition to any such movement because the railroads had a large surplus in transportation facilities over ordinary peace needs.

INTERESTS OF PRODUCERS AND CONSUMERS IGNORED

The immediate danger of relinquishing our sovereign power will be that the local interests of the producers and consumers will be left out of view and the State will be powerless to afford any relief, no matter how urgently and promptly it may be needed. Quite naturally a large industrial and commercial interests are strongly allied on the side of the railroads in their efforts to have all power to control and regulate commerce centralized in the National Government to the exclusion of the various State Governments because they are the beneficiaries of many preferential rates and monopolistic advantages. The large railroads, on the other hand, are not concerned about the dignity or the sovereignty of the various States. Their chief consideration is to promote industry and commerce at and between those points which will produce the largest volume of transportation. Transportation is their stock in trade and they are interested in producing and selling as much of it as possible, comprising long, double and treble hauls.

DEFECT IN POLICY OF THE UNITED STATES RAILROAD ADMINISTRATION

The policy of the United States Railroad Administration has been and is one of endeavoring to make the railways self-supporting throughout the war period. Referring to the matter of the 25-per-cent increase which was made in freight and passenger rates, effective June 25, 1918, some of the assistant directors of the Railroad Administration have believed that, while providing for said support, it was a "ready and convenient form of taxation during the war emergency." We have been and are unable to subscribe to the logic of such a view, for the reason that it will not stand the test of fair analysis.

In the first place, a horizontal increase, either in rates or taxation imposes an unequalized burden on the public. In other words, as shown by the rate analysis set forth hereinbefore, it does not operate uniformly. For example, whereas the rate on the movement of wool from certain wool-producing Nevada points to Boston, was normally \$40 per ton, it is now (including said 25-per-cent horizontal increase) \$50 per ton. On the other hand, the rate covering the "longer-haul" movement of wool from San Francisco to Boston was formerly \$20 per ton, and is now only \$25 per ton, from which it is to be noted that as a result of said increase the contribution taken from our Nevada wool producers amounts to \$10 per ton, whereas the San Francisco jobber is required to contribute only \$5 per ton toward the support of the war-emergency burden of the Government.

This illustrates the vice of the horizontal method employed, as well as the fact that railroad long-and-short-haul discrimination has been greatly intensified against our wool producers.

IN RE UNEQUAL TAXATION

In the second place, if said war-emergency increase in rates is treated from the standpoint of taxation, it is to be said that it does not reach all forms of property, such, for example, as the arts and treasures, moneys and credits, and permanent or fixed forms of property not requiring annual maintenance or renewals. On the contrary, it places the entire burden of the tax upon the form of property which may be classed as freight and passenger traffic. And, yet, the afore-said forms of property demand and are entitled to the same degree of war protection as is freight and passenger traffic which actually receives transportation. Without this protection, and in the event of the invasion of our country by an enemy, these arts, treasures, moneys, credits, and fixed forms of property would not be worth the walls upon which they hang, the vaults within which they repose, or the ground upon which they stand, and, therefore, we have been unable to see the logic which has been advanced, that the railways, during war operation and control, and for twenty-one months thereafter, should be made to pay their own way and hold the federal treasury free from cost by imposing the entire burden upon the shipping and traveling public.

In this connection, it is to be noted that the railways throughout the war emergency were equally as essential as were the battleships and the armaments, if not more essential to the adequate preparedness of the Nation for the purpose of winning the war. It is also interesting to note that the expense for the maintenance of the Navy went from a few hundred millions annually during peace times to two and one-half billion dollars for the war year 1918; yet this burden has, by taxation, been spread equally over all forms of property.

In our view, the unusual and extraordinary cost incurred for the essential war operation of the railroads, even though it may be a billion dollars or more over normal operations, should, in like manner, have been borne by general taxation instead of placing the entire burden upon the traveling and shipping public by an increase in freight and fares.

In this behalf, Senator Townsend, a member of the conference committee, speaking on the floor of the Senate, March 13, 1918, in explanation of his vote against the final adoption of the conference committee's report, said:

I do not care to discuss the merits of the question as to whether rates should be high or low, or whether they should be increased or decreased; my statement * * * is that the power to increase rates is not essential to the conduct of the war, so far as the railroads are concerned. *The question of raising rates is to be brought about after the general increase of the wages of railroad men throughout the United States has occurred, and that condition will be carried over into times of peace, when the war is over.* It is this fact which pleases the railroad owners.

We had great contention over this subject. Finally, the department desired that we should incorporate in the bill the provision whereby the Interstate Commerce Commission could fix the rates, but they are obliged to fix those rates so high as to compensate for all the circumstances of federal operation of

the roads. I contended against that proposition, believing it to be absolutely wrong.

The railroads were taken over as a war necessity; there was no excuse for taking them over. Those railroads were to be operated not in accordance with the principles of economy but in accordance with the principle of efficiency for the war. Provision was made for constructing tracks, if the President so desired, to munition factories or other interests operated by the Government and to shipyards.

To have Congress provide that the Interstate Commerce Commission fix the rates of traffic so high as to meet all of these extraordinary circumstances was to put in force a law which was unjust in the extreme. *farmer whose products are transported by rail to market; the merchant brings his merchandise by railroad; the consumers of fuel and clothes and groceries, should not be compelled to pay for the operation of railroads for war purposes.*

I recognize the fact that if the rates of wages were raised, that very thing would be an element which should be considered by the Interstate Commerce Commission in fixing the rates; there is no question about that. The shipper must pay a reasonable charge for the privilege of using the road, and it is possibly might have been raised; but the shippers of this country ought not to be compelled to pay for the operations of the war, for the expenditure of money from which they can obtain no benefit whatever.

I know the argument was made and the question was asked: "What difference does it make whether we take this money out of the shippers directly or whether we go into the treasury and take out the balance?" It makes all the difference in the world. When we speak of shippers we are reminded frequently that many of the shippers have made large sums of money and that they well afford to contribute out of their earnings this extra rate; but that is not the fact of the actual fact that the shipper does not pay the freight. In all cases, or, indeed, in a majority of cases, it is the producer and the consumer in this country who pay the freight.

And to the same effect, Senator Cummins said, upon the same occasion:

If we are to use these railway companies as a single system, if we are to use them for the benefit of the people generally, if we are to use them as instruments of commerce, it is a hideous injustice to devolve the burden upon those who may in the meantime pay the freight in the transportation of persons and property in commerce generally.

Can you defend any such course as that? Will any Senator here be heard to say that, if this war requires the railroads to be used in a particular way—an abnormal, unusual, extraordinary way—in order to carry on the war, men and women who are dependent upon transportation in carrying forward the ordinary affairs of life shall bear the burden? You know as well as I that a burden of that kind ought to be borne through general taxation and through railway rates.

GOVERNMENT PARTICIPATES IN PREFERENTIAL RATES, THE BURDEN OF WHICH IS CAST UPON AND PAID BY THE SHIPPING AND TRAVELING PUBLIC.

The Government, through rights accruing from bond and land grant aid extended in the construction of approximately 15,000 miles of railroad, beginning in or about 1852, has, through the medium of special contracts accepted and is accepting from the bulk of 250,000 miles of railroad throughout the United States grossly unjust preferential and discriminatory rates and fares for the movement of government freight, munitions and troops. The net rate which the Government is accepting will probably amount to an average of 10 per cent, or a half-rate of the lowest published railroad schedules.

In consideration of the land-grant or bond aid extended by the Government for the promotion and aid in the construction of certain

railway lines, said grants, or subsidies, provide, substantially, that "said railroads and branches shall be and remain public highways for the use of the Government of the United States, free from toll or other charge upon the transportation of any property or troops of the United States, and provided further, that all property and troops of the United States shall at all times be transported over said railroads and branches at the cost, charge and expense of the company or corporation owning or operating said road and branches respectively, when so required by the Government of the United States."

Apparently, because of these land grants and bond subsidy contracts, and because the lines in question are now parts of large systems, land-grant equalization agreements have, in most cases, been entered into between the Government and the railroads, providing for a net percentage reduction in the rate that shall be paid by the Government for the movement of its freight and troops over the system mileage rather than the enforcement of the free-rate provision over portions of said system mileage.

As the nongovernment-aided lines connect with said land-grant or bond-aided lines, they have, in order to participate in the government traffic, made special agreements to meet the reduced rates of said government-aided lines. The question for consideration, therefore, is how much of a loss has accrued in the revenues under both private and government operation and control during the war years 1917 and 1918 as a result of these preferential rates which have been accorded to the Government; also, how disproportionately has this burden been cast upon the shipping and traveling public, instead of being equally spread over all property for the protection of which the war was fought, and to what extent were the reductions responsible for the Government's 25-per-cent increase in rates and fares to the shipping and traveling public, and for the \$200,000,000 deficit in railway net income which accrued during the year 1918. Morally, this policy by which the government makes itself a preferred patron of the railroads and a participant in the use of preferential rates of pay—in some cases a free rate, in others less than the cost of the service, and in practically all at less than fair compensation—for freight, passenger and parcel post services, is altogether wrong in principle. These unreasonable service and rate concessions taken by the government in lieu of long-time payments from the railroads for charter, land-grant and bond-aid considerations are outrageously discriminatory and cast upon shippers and travelers least able to pay for transportation, higher charges than would otherwise be necessary if the government was required, as it clearly should be, to pay for its transportation in the same proportion that the general public does. If the States, counties, municipalities and the people are required to pay the established tariff charges for their railway service, why should the government be allowed to take unto itself preferential rates amounting in the aggregate to probably not more than an average of one-half of said tariff rates. Is it any wonder that local state rates and fares are high, and does it answer the question as to why rates and fares were increased from twenty-five to fifty per cent in the face of and notwithstanding the enormous increase in the volume of railroad traffic during the years 1917 and 1918?

RAILROADS APPEAL TO COURTS TO HAVE EQUIPMENT PAID FROM GENERAL TAXATION

It is interesting to note that the trunk-line railway stockholders, w taking unto themselves the aforesaid excessive fixed compensation, from diminishing income, which, under private operation, would h accrued from increased war cost of labor, material and supplies, now preparing to litigate on the contention that the Government sho apply the aforesaid rule of general taxation in relieving their railro from the extraordinary war costs of renewals and additions to eq ment that have been incurred on their behalf by the United States R road Administration during the period of government operation. other words, the contention is made that, if the equipment was dered necessary by the war, it is the business of the Governmen bear the cost thereof, like any other expenditure incurred for war at least that the Government should assume that part of the cost w is represented by the war-emergency cost over the prewar or nor cost.

OBSOLESCENCE AND WASTEFUL OPERATIONS

The question of whether or not, and to what extent, there is o lescence in the railway plant, viewed from the standpoint of Nation's public highways, and not as independent lines or enti must be inquired into and the question determined whether or not present standard of facilities calling for exceedingly high-priced eq ment, materials and supplies is, all things considered, a justifiable l den to be assessed exclusively against the shipping and traveling pul and whether or not the plant facilities are not too burdensome wasteful in operation. In this behalf, many short-line railroads of country, and in fact a substantial number of trans-state railroads w serve an important element of the country's population and are in pensable to the development of many essential resources, are strugg to make their financial ends meet. Based on present conditions comparisons, many of these investments represent mistaken faith standards. Because of the policy which has been inaugurated an followed by the great trunk-line systems, there have been provided e increasing standards of heavy locomotives and cars, with consequ increase in weight of rail, track, bridges and other equipment w supplies the public service. In this connection, the heavy car eq ment supplies not only the service upon these great trunk-line syste but also, by interchange, the public served by the weaker and sho line railroads as well.

SHORT-LINE RAILROAD POLICY DEFECTIVE

The policy has forced the building and operation of both short independent weak-line railroads with heavy standard-gage tr bridges and locomotives, in order to provide for the free interchang said trunk-line railway car equipment, all of which is, in m instances, far in excess of the reasonably economical needs of the te tory which they serve. This burden has already broken down s short-line railroads since their release from federal control, July 1918, and ultimately will destroy others, unless some form of relie afforded by the Government or the trunk-line systems which they f

As originators and distributors of traffic, these short lines are an essential consideration in connection with the rendering of a nation-wide transportation service. Lighter and cheaper railroads would have been adequate, but because there was and is free interchange and use of heavy trunk-line equipment available and always the hope of the promoters that a profitable sale can ultimately be made to one of the trunk lines, costly standard-gage lines have been constructed and heavy locomotives purchased, with the result that the cost of upkeep and operation has been and is too burdensome for the average short line to pay a commensurate return upon its investment.

EXCESSIVE INVESTMENTS RESULT IN WASTE OF CAPITAL AND UNWARRANTED LOSS TO STOCKHOLDERS AND PUBLIC

Under prewar conditions excessive and unnecessary investments have grown up through competitive construction and duplication of large and needless standards of track and equipment, which, when adopted by some of the more important trunk lines, has been followed by practically every other line that could secure the necessary finances or credit, and all too often without regard to any consideration other than the first cost of the line, or the additions or betterments, and without proper allowance for the heavy cost of operating cumbersome and wasteful plants largely in excess of the reasonable needs of the territory served. Because of these conditions, state legislatures, courts and commissions have been compelled to authorize all that the traffic will bear in rates; but, notwithstanding this action, some of these lines could not earn a return on their misdesigned and overcostly properties, even if the rates were double what they are. While the 25-per-cent increase in rates, prescribed by the Railroad Administration June 25, 1918, was made applicable to the "short-line" railroads as well as the trunk-line railroads, many of these "feeder lines" found it impossible to apply the full amount of increase, because to do so would result either in preventing the movement of traffic entirely, or in turning it away into other channels of transportation. Thus far, other than a grant of charter power to a corporation to construct and operate a public highway for the State, in lieu of exercising this function on its own behalf, there has been no state or national regulation of the character and extent of the road and facilities furnished. And, therefore, there has been, and is no restriction in the adoption of necessary, economical and profitable standards of line and equipment for the protection of the stockholders and the public. The policy has been to build the railway plants of the country substantially in advance of the reasonable needs of traffic, and this has resulted in making a profitable market for the products of the steel and iron companies, the car- and locomotive-building companies, and for other materials and supplies entering into the construction and operation of railways. This policy is defended upon the ground that, whenever the railroads are able to purchase equipment and make additions and betterments, it brings with it nation-wide prosperity; but, during such periods, with capital comparatively easy to obtain, there has been afforded opportunity for waste and extravagance, and, as there has been practically no control or regulation over such expenditures, adequate protection has not been

afforded to stockholders and the public against the construction duplication of extravagant and unprofitable railway facilities. A number of States steps have been taken to prevent the duplication of public utilities in territory already served by an established utility, effective supervision covering the adoption of necessary economic standards and the expenditure of the money has not been provided.

Much is said about the regulation of the issuance and sale of securities that has been tried in many States and which is now proposed for national adoption for the purpose of preventing excessive capitalization; but, in our view, this character of regulation does not reach the evils herein referred to. Capitalization is not used as the basis upon which the reasonableness of rates is measured, and neither can it be used as the fair value for the sale or the taxation of the property. It is, therefore, largely a matter of indifference whether the capitalization exceeds the physical valuation of the property or not; from which it follows that, if the credit of the corporation in question is sufficient to enable it to float bonds 50 or 100 per cent in excess of the physical value of the property, we fail to see why the transaction should not be authorized, provided the money is wisely and beneficially expended. It is upon the latter point that initial action and effective supervision is vitally necessary in the interest of the stockholders and the public. In the absence of such protection in the past there have been unwise and extravagant expenditures of capital, and the inevitable result in all too many such extravagant investments has been to reduce them in earning power and sale value to the basis upon which the property will salvage for; and, intrinsically, this is all that the state and federal courts, which are justly scrupulous in their protection of property rights, can find them to be worth.

While the State and National Governments are censurable for their failure to exercise reasonable authority over the character and extent of the expenditures made in their public-service facilities, unfortunately the stockholders who are willing to take a chance are responsible, for and must suffer, these losses. Failure to regulate in this respect also causes a serious incidental loss to fall back upon the public in the form of restricted service and higher rates than would otherwise be necessary. Further, it results in the wasting of capital that could be beneficially and productively employed in developing our agricultural and other natural resources.

EXCESS IN CAPACITY OF RAILWAYS ENORMOUS

Based upon the testimony given by railway executives and managers during the past year before the Senate and House Committees on Interstate Commerce, measured by the traffic handled in 1917, as compared with 1915, there was available, prior to the entry of this country into the war, an excess in railway facilities over and above the ordinary peace needs of the shipping and traveling public, ranging from 50 to 100 per cent. Treated from the standpoint of adequate preparation for war, it may be stated that this policy of building the Nation's railway systems far in advance of the immediate needs of commerce is far-sighted and, therefore, that our railway executives are entitled to commendation because, due to their foresight, we were adequately

pared and had available for war-emergency purposes the essential facilities without which the troops, armaments, munitions and supplies for the Army and Navy could not have been so expeditiously furnished. And, while this may be conceded, and also that the Government is equally as interested in the maintenance of an adequate excess over peace needs in the railway facilities of the country for essential war preparedness, as it is in the building up and the maintenance of an adequate army and navy for the protection of our country against possible enemy aggression, it cannot be overemphasized, for the reasons heretofore given, that the cost to the shipping and traveling public is becoming entirely too burdensome.

FREIGHT EQUIPMENT EXCESSIVE IN CAPACITY

Supplementing what is said above, it is interesting to note that the freight-carrying equipment of the Nation has largely outgrown reasonable proportions; that it is cumbersome and expensive in investment, operation and maintenance, and that it does not show the operating and service efficiency that might reasonably be expected. The average dead weight of cars and engines in train lots for 1915 was approximately 24 tons per car and their average carrying capacity was 40 tons each; but the average load of freight carried was only 13.8 tons per car, or a load factor efficiency of 34½ per cent, from which it follows, of course, that there was a nonproductive dead weight of 65½ per cent in equipment transported throughout the country during said period.

Aside from this waste in investment, operation and maintenance, these excess-capacity facilities are largely responsible for an exceedingly slow freight movement to the disadvantage of the shipping public. Daniel Willard, president of the Baltimore and Ohio Railroad, while at the head of the National Council of Defense, during 1917, stated in this behalf that freight cars were in the hands of shippers 37 per cent of the time, but that of the balance, or 63 per cent, of the time that the cars were in the possession of the carriers, they were moving but 11 per cent of the time. Further, in this behalf, the Railway Board, during 1917, showed that the average engine movement on the railways of the United States was only 68 miles per day, and that the car movement was only 28 miles per day, or hardly the equivalent of everyday automobile truck and touring-car mileage.

Thus far, there has been no effort on the part of Congress or the Federal Commission to prescribe freight-movement speed regulations or to regulate standards of track and equipment and the extent of investment made therein. The matter has been entirely one of railway policy and management. It cannot be said therefore, that state or national railroad regulation is responsible for this condition of affairs. On the contrary, it is because of the absence of such regulation which manifestly is necessary for the future.

"DRAG-TONNAGE" TRAIN-LOADING COSTLY AND CAUSE OF UNREASONABLY SLOW SERVICE

Seemingly, everything has been subverted to the question of increased train-loading, on the theory that it would result in greatly improved operating economy. It is doubtful, however, whether this result has

been satisfactorily accomplished when proper consideration is given the largely increased investment made necessary in track and equipment, the heavy cost of maintenance of engines and cars occasioned "drag-tonnage" trains, and the wasteful cost of handling the aforesaid enormous dead weight in equipment which manifestly is unreasonably excessive in capacity.

Holding at terminals to complete heavy train-loading is responsible for an unreasonably slow service to the public on the average railroad and also for much of the car shortage which exists periodically almost every year. It has also limited the monthly mileage of trainmen and engine-men, upon which the adequacy of their compensation largely depends, and has forced them to make frequent demands for an increase in the mileage units of pay in order to secure a fair monthly compensation. Instead of sacrificing everything to tonnage train-loading, by the elimination of the aforesaid waste in facilities and the more frequent operation of train units, the trainmen's and engine-men's monthly mileage would be substantially increased without undue hardship and without the necessity for such a high rate in the unit or mileage-pay factor. From this, it follows that it would not have been difficult to adjust the wage questions satisfactorily without the intervention of legislation and without the aforesaid waste which has been caused by operations during recent years. By the same means, the public would have received an expedited freight movement, to which it is fairly entitled, and which it will ultimately demand and enforce by requiring a train movement averaging from fifteen to twenty miles per hour between terminals, instead of the present speed of approximately ten miles per hour.

TRUNK-LINE PASSENGER-TRAIN SERVICE EXTRAVAGANT AND PLACES TOO HEAVY A BURDEN ON LOCAL TRAFFIC

Exception must also be taken to the use of palatial and exceedingly costly and wasteful passenger-train equipment which has sprung from the policy of the trunk-line railways vying with each other in the use of their passenger departments largely as advertising mediums and business promoters, as well as for the purpose of rendering an adequate public service. From this, it results that the carriers have maintained a policy of building this branch of the service far in advance of the public needs, in their competitive effort to make their passenger service higher grade and more inviting than that of their rivals, in order to encourage travel on their lines and thus, by furnishing a superior and more luxurious service, secure freight business. This has resulted in the wasteful duplication of passenger-train service between important centers of travel and is responsible for an altogether too costly local passenger-train service being furnished on account of said trunk-line being made up of heavy standard and tourist sleeping cars, buffet cars, observation cars and dining cars; also the operation of trains designed exclusively for through traffic, and special train service accommodating heavy colonization and excursion business, practically all of which is chargeable to interstate traffic and with which local traffic is only incidentally concerned.

Yet, the Interstate Commerce Commission, by its decision based on book value or the accumulative cost, in the Illinois passenger-fare case

has undertaken to set aside the legislative-made 2-cent fare and establish a fare of 2.4 cents per mile in disregard of the fair present value contended for by the associated state railroad commissions in the Western Advance-Rate Cases, and without regard to that portion of the property value which is useful and beneficially employed in rendering the state service; and, therefore, it has held that the people who are traveling locally between points within Illinois must bear their proportionate share of all these costly and wasteful passenger-train facilities without regard to the fact that the incidental benefit to them is small and that they are in no way responsible for the heavy train and locomotive equipment which is made necessary in order to maintain the aforesaid through competitive service. In this connection, a reasonably adequate, comfortable and expeditious local-passenger service was, under normal conditions, furnished throughout the populous sections of the country by interurban electric railway lines ranging from $1\frac{1}{2}$ cents to 2 cents per mile.

Further, as illustrative of the waste, the cost of which is placed on the local state traffic, the Kansas Railroad Commission has shown before the courts in the 2-cent passenger-fare case, which is now being tried to ascertain whether the 2.6-cent fare prescribed by the Interstate Commerce Commission shall prevail, that the average car foot-space devoted to the service of the local passenger is $2\frac{1}{2}$ feet, whereas the through Pullman passenger is accorded $10\frac{1}{2}$ feet.

The average railroad passenger train today is made up of six cars and locomotive, comprising mail, baggage and express cars; coaches, and dining, sleeping and observation cars. If all-steel cars are used, which the railroads have been and are adopting as fast as possible, the dead-weight tonnage of such a train will average approximately 550 tons. The average train capacity is not less than 150 passengers, whereas the average load is 54 passengers, or 36 per cent of capacity. Therefore this is an average of ten tons of equipment used in transporting each passenger. Comparatively speaking, it is interesting to note that automobile and autostage lines are furnishing an attractive and economical local-passenger service by the use of facilities which average from one-quarter to one-half a ton per passenger, and this is to be compared with the aforesaid ten tons of equipment used by the railways. Manifestly, the railway passenger facilities are grossly wasteful and place entirely too heavy a burden in fares upon the public for the support of excessive investment and carrying and maintenance costs; also, for the aforesaid reasons, the charges imposed upon the public for freight service are excessive and wasteful.

HENRY FORD SAYS RAILWAYS WASTEFUL

In confirmation of the foregoing, Henry Ford, speaking in Engineering and Contracting (Chicago, August 21, 1918), thinks that passenger coaches and freight cars are behind the times, and points out that the designers of railway rolling stock have failed to utilize modern knowledge of light alloys and structural principles. He says:

Four-fifths of the railroad's work is the hauling of the dead weight of its own wastefully heavy engines and cars. This is why railroad presidents have such a hard time to figure out freight and passenger rates on the 20 per cent of live load to cover the cost of hauling this enormous 80 per cent of dead weight around.

EXCESSIVE INVESTMENTS, ACCUMULATIVE COST, AND OBSOLESCENCE CAST UPON THE STATES UNDER FEDERAL REGULATION

As before stated, no regulation of the character or the extent of the expenditures for additions and betterments in freight and passenger service has been undertaken by the Government in order to protect the public and the stockholders against waste and exploitation. Unless action is taken in hand, the carriers are free to go on increasing the capacity of their equipment and, likewise, the strengthening of their track, because the increasing weight of equipment forces the latter, and the building into the future an increasing investment sufficient to not only offset the normal increase which annually takes place in traffic, but ultimately to justify, under the policy of governmental regulation thus far prescribed by Congress, continuing increases in freight rates and passenger fares.

Covering 250,000 miles, the accumulative book cost of our railways now totals approximately \$18,000,000,000, or an average of \$72,000 per mile.

If all of the 250,000 miles of railway within the United States, large and small, including main and branch lines, both productive and non-productive, should, upon final appraisalment by the Federal Valuation Board, reach an average valuation of \$50,000 per mile, which, all things considered, seems high for rate-fixing purposes, the fair present value of the railways would be twelve and one-half billion dollars, compared with which the book cost value is approximately eighteen billion dollars. If, upon said fair present value, the carriers should, for the future, under normal conditions and reasonable rates, earn nine hundred and fifty millions net per annum, after deducting operating expenses and taxes, it might be said to be the equivalent of sixteen billion dollars on a 10 per-cent basis, and this amount would be the condemnation, or said value, but it could not be said to afford a correct basis upon which further and continuing increases in rates to the public could be established.

The fallacy of using book cost is quickly demonstrated by the carriers themselves when their property is under consideration for taxation. Showing is then vigorously and properly made that said accumulative cost must not be used, because it does not take account of obsolete, discarded and depreciated property, and that it does not fairly measure the real value of the property then in existence and beneficially used for the public service.

State authorities have, we believe, without exception, accepted this view as sound, and a number of States, notably Wisconsin, Michigan and New Jersey, have made inventory valuations of their railway property for the purpose of accurately establishing the full cash value for taxation. In finding the "cash value" for taxation and sale (the rule being the same in both cases), there is included the intangible value, when it exists, made up from the earnings on the rates fixed at the "fair present value" of the property, and this frequently produces a full cash value in excess of the accumulative cost value. (See the *Monongahela* case, 148 U. S. 312, and the *Backus* case, 154 U. S. 439.) Therefore, the sale or taxation cash value cannot ordinarily be taken for rate-fixing purposes, because to do so would justify continuing increases in the rates if the business remains normal or is upwardly tending. There is much confusion in the public mind regarding the

distinctions in value, many people believing that the "cash value" evidenced by stocks and bonds, in some cases, and by the earnings, in others, should be the basis upon which to fix rates for the shippers and consumers, but, as before stated, this would justify a continuing increase in rates without in any way increasing the service to the shipper or the cost thereof to the carrier. (See New Jersey Gas case, 87 Atl. 651.)

Without desire to indulge in criticism, but because of the importance of protecting and preserving the fundamental principles of regulation which have been adopted by the States and approved by the courts, exception must be taken to the use of total accumulative cost as a basis upon which to increase rates and predicate a fair return. This is a most serious departure from time-honored practices in the field of regulation. In fact, it is the very annihilation of the principle that "an adequate return shall be predicated only upon the fair present value of the property at the time of the inquiry." Until adopted in the 1915 Western Advance Rate Case, 35 I. C. C. 497, and related cases, no court, commission or other regulative tribunal in this country has ever subverted such an important principle as this in its determination of what is just and reasonable to the public. In taking this action, the Commission recognized its departure from well-established and sound practice as follows:

The liability of error in accepting book cost of the property as the basis for the computation of return on investment is fully recognized.

We consider this action exceedingly harmful, for the reason that it will be invoked against public regulating bodies and courts by the public-service corporations throughout the country, and, while the United States Supreme Court is thus far firmly committed against any such propaganda, it may, because the findings of the Interstate Commerce Commission on questions of fact are rarely overturned by the courts, and usually accepted as final, result in placing upon the public an absolutely unjustifiable burden.

As illustrative of the vice of accumulative book cost, compared with fair present value for rate-fixing purposes, it may be said that, in the Western Advance Rate Cases, 35 I. C. C. 530, before the Interstate Commerce Commission in 1915, there was introduced on behalf of the western state railroad commissions, including the Nevada Commission, testimony showing that the appraised present value of twenty-five railways serving Michigan, Minnesota, Wisconsin, South Dakota, and Nebraska, comprising 29,000 miles of line, was \$937,000,000, or an average of \$32,330 per mile, compared with which the stock and bond par value (not the market value) was \$1,459,000,000, and that the accumulative book cost was \$1,489,000,000, or an average of \$51,340 per mile.

As further illustrative of said excess cost over fair present value, the Interstate Commerce Commission has recently completed its reproduction valuation of the property of the Tonopah and Goldfield Railroad, covering 113 miles of line in Nevada. As indicative of the wide variation between the company's book cost and the inventory found by the federal valuation engineers, let it be said that the accumulative cost of road and equipment reported by the railroad company is \$3,700,000, or an average of \$32,680 per mile, compared with which the Commission's reproduction new value is \$2,180,000, or an average of \$19,225 per mile.

Further illustrating the vice of basing conclusions on book cost when the reasonableness of various state 2-cent fare laws has been brought into issue and effort made to destroy them by this character of federal regulation, it is highly instructive to review the case of the Kansas City Southern Railway. This line traverses the country between Kansas City, Mo., and Galveston, Tex., a distance of 823 miles. The total book cost of the railroad, *including stock and bond allotments* issued to contractors as payment for construction, amounts to \$104,000,000, or an average of \$127,000 per mile. Following reorganization, between 1910 and 1916, the capitalization was fixed at \$100,000,000, whereas the market value ranged around \$57,000,000, or an average of \$70,000 per mile. Upon completion of the federal appraisal, the Interstate Commerce Commission found that the "fair original cost" was \$47,000,000, or an average of \$57,000 per mile of road; that the reproduction (new value) of the road was \$48,000,000, or an average of \$58,000 per mile; and that the reproduction new value, less depreciation, or present condition value, was \$40,000,000, or an average of \$49,000 per mile of road. The net earnings of this road for the year 1914 when applied to the respective valuations tell a remarkable story; in fact, tell the whole story without further comment and emphasize the importance of each State retaining and enforcing its reserved powers for the protection of the people.

The net earnings in 1914 were \$3,490,000, from which it follows that it was a return of 3.33 per cent on the book value; 6.2 per cent on the market value of the capital securities; 7.38 per cent on the appraisal original cost; and 8.57 per cent on the reproduction new value, less depreciation.

Experience, under the past and present form of national regulation by the Interstate Commerce Commission and the Railroad Administration, shows that effort has been and is being made to keep the burden of these excessive investments in unnecessary and wasteful facilities upon the various States. This the Interstate Commission has demonstrated by authorizing the railroads to set aside state legislative- and commission-made rates and fares under the plea of removing discrimination (not the long-and-short-haul brand) covering local traffic between two particular States, and to fix higher charges on the basis of the accumulative book costs of their properties—without regard to obsolescence or to what extent the transportation facilities furnished for state service are necessary or excessive.

Such authorization has been granted the railroads by the Commission in the Shreveport-Texas, Illinois and related cases without regard to the reasonable rates fixed for local traffic by the State Legislatures and Commissions and approved by the courts, and wholly without regard to many important adjudicated principles of regulation. The Railroad Administration has also given its approval to this wholesale method of requiring the States to pay upon what is furnished and not upon what is beneficially used, by horizontally increasing all freight rates 25 per cent and passenger fares upward to 86.4 per cent without the consent of the various States; without opportunity for the public to be heard and without regard to the reasonableness of the rates, and upon the single consideration only that the Government wished to make the railroads self-supporting and to pay the owners for the use of their prop-

erty an annual compensation approximating nine hundred and fifty million dollars, based on the average net earnings made under private operation for the three-year period ending June 30, 1917.

SENATOR CUMMINS SAYS COMPENSATION IS EXCESSIVE

For the reasons heretofore shown, this compensation is excessive and entirely too heavy a burden to be cast upon the producers and consumers during peace time or normal conditions. In the judgment of Senator Cummins, it is excessive to the extent of two hundred million dollars annually. In discussing the matter on the floor of the Senate, March 13, 1918, when the conference report of the Railway Control Bill was upon final passage, he said :

Under the circumstances, I cannot bring myself to vote for a bill which is intended simply to provide compensation, or largely so ; which tenders to some of the railroad companies a reward for the use of their property, which shocks my moral sense and which, in my judgment, will shock the moral sense and arouse the indignation of all the people of the United States, when they become familiar with the facts which underlie the problem which we are engaged in solving. * * * This is my first objection to the conference report and to the bill. I do not look with as much complacency as some people seem to do upon the proposal to pay what I regard as a compensation which, in the aggregate, if the war lasts five years, including the period of the war, will amount to a billion dollars more than would be awarded in any court ; a billion dollars more than can be defended by any course of reasoning or any facts which the history of transportation in this country has developed.

STATES MUST PROTECT THEIR RESERVED POWERS OR CORPORATIONS WILL DESTROY THEM

It therefore follows that these war-transportation burdens, amounting to approximately one billion dollars annually, which have been placed upon the shipping and traveling public by increases in rates and fares ranging from 25 per cent to 50 per cent are peculiarly war-emergency costs which should have been taken care of by general taxation of all property, instead of placing it against a particular class, i. e., the shippers and travelers.

Aside from the war power, there is no constitutional means by which the States can be obligated to pay rates upon more than that portion of the property which is necessarily and beneficially useful in taking care of their requirements—excessive expenditures for competitive duplication of lines and wasteful facilities to the contrary notwithstanding. Unless the States and the people take back their power—if, in fact, it has ever been delegated to the extent of permitting a branch of the Federal Government to grant the railroads authority to set at naught state-made rates and adjudicated regulations by the United States Supreme Court—the States will soon be destroyed. The importance of preserving this power cannot be overestimated. In no other way may the people of the various States, and especially those of the Western and Southern States, be assured that they will not be unreasonably burdened with excessive freight and passenger charges. Effective regulation and the principles which govern it have, until the intervention of said federal Shreveport doctrine, adequately protected the people of the various Commonwealths against unjust and oppressive exactions by the corporations which they have chartered and created

to perform their public service; but this vitally essential protection being set aside by federal regulation.

In this behalf, the important principles of regulation which have been built by the various States, which have been approved by the United States Supreme Court, and which are being ignored by the aforesaid wholesale methods of federal regulation, are made clear in the following excerpts from decisions of the United States Supreme Court:

EXCESSIVE INVESTMENTS NOT ALLOWED

A fair return to which the owner of utility property is entitled cannot always be based upon the total amount invested, because some portion of that which is required by the investment may be neither necessary nor presently useful for the public service. But the fair return is to be based upon the present value of that which is used for public benefit, having due regard always to the reasonable value. (*Spring Valley Water Case*, 192 Fed. 137; *San Diego Land and T. Co. v. National City*, 174 U. S. 735.)

Original cost is not a fair criterion of fair present value, because the plant may have cost too much, or it may be of unnecessary dimensions. (*Wilcoxon Con. Gas Co.*, 212 U. S. 19.)

The cost of reproduction is not a fair measure of the value unless a proper allowance is made for depreciation, because all constructive portions of the plant are subject to deterioration and to be worn out or consumed by use. (*Knorrville v. Knorrville Water Co.*, 212 U. S. 1.)

The aggregate value of bonds and issued capital stock of the company at the present market price is not a reliable index of the value of the plant, because such prices often rise and fall from the operation of causes which have little or nothing to do with the intrinsic value of the property; and the bonded and other indebtedness of the company may exceed the actual value of the property. * * * The value to be ascertained is the value at the time of the inquiry. Only that property is to be considered which was then used in supplying the public service. * * * And this is to be determined by considering the depreciation suffered by that portion of the plant which is worn out or use or action of the elements, or shorn of its value by newer, cheaper, and more efficient appliances and machinery. (*Spring Valley Water Case*, 192 Fed. 137.)

If a plant is built for a larger area than it finds itself able to supply, apart from that, if it does not have the customers contemplated, neither just nor the Constitution requires that, say, two-thirds of the contemplated number shall pay a full return. (*San Diego Land and T. Co. v. Jasper*, 180 U. S. 439.)

Suppose that a 500-hp. engine was used for pumping when a 100-hp. engine would do as well. As property to be fairly valued, the larger engine might be more valuable than the smaller one, but it could not be said that it would be reasonable to compel the public to pay rates based upon the value of the unnecessarily expensive engine. (*Water District v. Water Co.*, 99 Me. 371.)

If a railroad is built into a new and sparsely settled territory with a view of serving a larger future population and developing business, the Constitution does not require the few people and the small business of the present time to pay rates which would yield an income equal to the full return to be gathered when the country is populated and business developed to the full capacity of the road. (*S. P. Company v. Bartine* [Nevada], 170 Fed. 725.)

The realization of the benefits of property must always depend in a large degree on the ability and sagacity of those who employ it; but the appraisal must be of an instrument of public service, as property, not the skill of the user. And when particular physical items are estimated as worth so much new, if in fact they be depreciated, this amount should be found and allowed for. If this is not done, the physical valuation is manifestly incomplete. (*Minnesota Rate Case*, 230 U. S. 353.)

EXCESSIVE OPERATING EXPENSES NOT ALLOWED

Of what do these operating expenses consist? Surely before the courts are called upon to adjudge an Act of the Legislature fixing the maximum passenger rates for railroad companies to be unconstitutional, on the ground that

enforcement would prevent the stockholders from receiving any dividends on their investment, or the bondholders any interest on their loans, they should be fully advised as to what is done with the receipts and earnings of the company. * * * While the protection of vested rights of property is a supreme duty of the courts, it has not come to this, that the legislative power rests subservient to the discretion of any railroad corporation which may, by unreasonable expenditures, or in some other improper way, transfer its earnings into what it is pleased to call operating expenses. Must it be declared, as a matter of law, that the reduction of rates necessarily diminishes income? May it not be possible—indeed, does not all experience suggest the probability—that a reduction of rates will increase the amount of business, and therefore the earnings? At any rate must the court assume that it has no such effect; and, ignoring all other considerations, hold, as a matter of law, that a reduction of rates necessarily diminishes earnings. (*Railway Company v. Wellman*, 143 U. S. 345; *Woodside v. Nevada Railroad Commission*, 184 Fed. 358.)

CHARTER POWER OF STATES MUST NOT BE SURRENDERED

The invaluable power to require its railways to perform an adequate service and to prevent the curtailment or withdrawal of essential service and facilities is an inherent power of the States which arises because of the contractual obligation of the charter or franchise which the State Legislature grants. This is an enforceable contract. This power should not be forfeited under the plea of substituting national incorporation or charters to the exclusion of the exercise of such power by the various States. To do so will not only result in sacrificing the States' essential power over rates and service, but also that of taxation and the exercise of the States' right of eminent domain in so far as public-service property is concerned.

Under the administration of such vast power by the National Government, there is no assurance that any particular State would be able to secure a federal charter for the construction and operation of a proposed railway, no matter how imperative the need might be therefor in the interest of internal state improvements.

Further, there is no definite assurance that the administration of matters relating to local service, rates and taxation would be as satisfactory as it is at present, and, therefore, in this connection, and in view of the aforesaid fundamental principles which the States have, after years of experience and trial made into statutory and adjudicated law for their protection, there is no good reason why the various States should turn over to some federal tribunal or tribunals for experimentation those powers which are being satisfactorily administered by local officers within the various States.

The importance of the States' sovereign power over charters is made clear by the following excerpts from decisions of the United States Supreme Court:

ADJUDICATED POWER OF THE STATES COVERING CHARTER PROVISIONS

Property becomes clothed with a public interest when used in a manner to make it of public consequence, and affect the community at large. When, therefore, one devotes his property to a use in which the public has an interest, he, in effect, grants to the public an interest in that use, and must submit to be controlled by the public for the common good, to the extent of the interest he has thus created. He may withdraw his grant by discontinuing the use; but, so long as he maintains the use, he must submit to the control.

The railroad companies are carriers for hire. They are incorporated as such and given extraordinary powers, in order that they may serve the public in that capacity. They are, therefore, engaged in a public employment affect-

ing the public interest, and, under decision of *Munn v. Illinois*, 94 U. S. 113, are subject to legislative control. They must carry when called upon to do so and can charge only a reasonable sum for carriage. (*C. B. & Q. R. R. v. Iowa*, 94 U. S. 161.)

At common law corporations formed merely for the pecuniary benefit of their shareholders could, by vote of the majority thereof, part with their property, and wind up their business, but corporations to which privileges are granted in order to enable them to accommodate the public and in the proper discharge of this duty the public are interested, do not come within the rule. * * * The corporation cannot absolve itself by contract from the performance of public duties which it has undertaken and thereby make public accommodation and convenience subservient to its private interests. (*Baltimore Gas & Light Co. v. Maryland*, 130 U. S. 410.)

A corporation like a railroad has granted to it by charter and franchise intended in large measure to be exercised for the public good, the due performance of these functions, being the consideration for the public grant. Any contract which disables a corporation from performing these functions, which it undertakes without the consent of the State to transfer the rights and powers conferred by the charter or to relieve the grantees of the burden which it employs, is a violation of the contract with the State and is void as against public policy. (*Thomas v. Railroad Co.*, 101 U. S. 71.)

Railway companies accept their charters subject to the condition that they will conform to such reasonable regulations as the State may, from time to time, establish that are not in violation of the supreme law of the land. Another view of the relations between the State and the corporation created by it would mean that the directors of the corporation could manage its affairs solely with reference to the interest of the stockholders and without taking into consideration the interests of the general public. (*L. S. & M. S. R. R. v. Ohio*, 17 U. S. 285.)

PRINCIPLES EXEMPLIFIED BY THE WEST VIRGINIA AND RELATED CASES

In the case of *Chesapeake and Ohio Railroad v. P. S. Commission of West Virginia*, 242 U. S. 603, the Commission had ordered the railway to perform double daily passenger service at a loss over a four-mile branch line which theretofore had been used exclusively for freight service between the main line and certain coal mines at the end of the branch line. In answering, one of the railroad's defenses, among others, was that its charter referred to the operation of railroads and not branch lines. In upholding the action of the State Commission, the United States Supreme Court said:

True, the section containing this declaration speaks of railroads without particularly mentioning branch lines, but that it embraces the latter is shown by the State Court's opinion, which says that this branch line when constructed became an integral part of the extensive Chesapeake and Ohio system, and must be treated and controlled as such and not merely as a segregated part of it. Thus, in legal contemplation, the branch line was devoted to the transportation of passengers as well as freight; even though actually used only for the latter, an obligation to use it for both was imposed by law, and so could not be thrown off or extinguished by any act or omission of the railway company. It follows that the order, instead of enlarging the public purposes to which the line was devoted, does no more than to prevent a part of that purpose from being neglected.

One of the duties of a railroad company doing business as a common carrier is that of providing reasonable and adequate facilities for serving the public. This duty arises out of the acceptance and enjoyment of the powers and privileges granted by the State, and endures so long as they are retained. It represents a part of what the company undertakes to do in return for them, and its performance cannot be avoided simply because it will be attended by some pecuniary loss.

Although such loss is, of course, a circumstance to be considered in passing upon the reasonableness of the order, it is not the only one. The nature and

of the carrier's business, its productiveness, the character of service rendered, the public need for it, and its effect upon the service already being rendered, are also to be considered.

and, to the same effect, see: *Missouri Pacific R. R. Co. v. Kansas*, 167 U. S. 262; *Atlantic Coast Line R. R. Co. v. N. C. Corporation Commission*, 206 U. S. 1; *Oregon Railroad and Navigation Co. v. Fairchild*, 197 U. S. 1; *Chicago, Burlington & Quincy R. R. Co. v. Railroad Commission*, 237 U. S. 220.

affirming the order in the North Carolina case (206 U. S. 1) regarding the performance of extra train service, Chief Justice White, with approval to the case of *Wisconsin Ry. v. Jacobsen*, 179 U. S. 274, wherein the United States Supreme Court sustained the order of the Minnesota Railroad Commission, the effect of which required the railroad company to exercise the power of eminent domain and purchase the necessary land to make track connections with another line of railroad for the purpose of affording to the public necessary facilities for the interchange of traffic.

INHERENT RIGHTS OF STATE GOVERNMENT AS UNDERSTOOD AND BENEFICIALLY EXERCISED BY THE PEOPLE

It is of the highest importance that power for the reasonable exercise of government be retained within the various Commonwealths in order that they may adequately and satisfactorily meet the local interests within each. It does not follow, therefore, that the local rates must of necessity be uniform or the same for traffic in one or more States and without regard to the imaginary lines separating them. This is true because natural resources vary so greatly in the different geographical subdivisions or States that railway traffic managers or regulating tribunals do not find it necessary or justifiable to establish the same local rate in several different States. On the contrary, they fix the local rates on the basis of the peculiar circumstances and conditions found within the confines of the various States, and, when the reasonableness and the compensatory character of such rates are measured by the commissions or courts, they are based largely upon the conditions existing within the particular State, the value of the property necessarily and beneficially used by the people within the regulating State, the operating conditions of the road therein, the energy, the creative and the productivity of the people, the necessities incident to industrial and state development, and the density of traffic and other conditions within the State affecting intrastate earnings and operating expenses. For the regulation of local traffic, we find it difficult to propose a better plan than is allowed for the future, whether the regulation is by the State or the Federal Government, or by both the Federal and State Governments acting jointly.

As to the regulation of interstate traffic, however, provision may be made and beneficially be made for zone or blanket rates covering large areas or territories in order to widen the purchasing and selling markets as much as possible. The rates fixed by the State for its domestic traffic are usually, for the reasons above given, either equal to or lower than interstate rates—in most cases much higher proportionally than the interstate rates—and, therefore, the interstate rates need not interfere with or affect said state rates. Nor, on the other hand, do said state rates unreasonably affect interstate rates. There can,

with proper facility, be two schedules of rates maintained—one covering the movement of state traffic and another covering the movement of interstate traffic—and this in fact is the manner in which the railroads have and do now maintain their rate schedules covering these two classes of commerce.

In this connection, the United States Supreme Court has said over and over again that state regulation of intrastate rates is not an interference with the regulation of interstate rates; that, ordinarily, the two are separable from a rate-making standpoint, and that it is only when the regulations by the State of its domestic rates so directly affect interstate rates as to amount to an unreasonable burden on interstate commerce that there is any ground whatever which authorizes Congress to require its subordinate tribunals to interfere, and in such event, the burden must be clearly undue; in other words, something more than the incidental effect which arises in the proper discharge of the State's power to control and regulate its own internal commerce.

TRANSPORTATION IMPORTANT FUNCTION OF GOVERNMENT

Transportation is an exceedingly important function of government—state government as well as national—and the people when informed will not lightly relinquish this sovereign right, but it should be borne in mind that attacks on State Railroad Commissions are a means to this end, because, under the guise of eliminating the State Commissions and unifying regulation, *there is involved the sacrifice of the right of the various State Legislatures and courts to take any action regarding state commerce.* We think that it must be admitted that the tendency for many years past and at the present time is strongly toward centralization in all lines of industry and that population and manufacturing of practically all kinds are being centralized at comparatively few railroad rate-favored centers on the seaboard, the Great Lakes, and the large rivers, to the exclusion of and at the expense of the country at large. And this has been and will continue exceedingly detrimental to community development and a more general distribution of population, wealth and happiness until definite action is taken by the people to protect themselves against this policy of railway and industrial development through the medium of preferential and discriminatory railroad rates, and unreasonable encroachment on the reserved rights of the States.

CORPORATIONS WILL BECOME GREATER THAN THE STATES WHICH EMPOWERED AND CREATED THEM

If the power is to be lodged in the hands of the Interstate Commerce Commission, it must be conceded by all that the Act to regulate commerce has been and is wholly insufficient for the proper and effective regulation of interstate commerce. In fact, it gives no such power for effective regulation as is granted by the various state railway commission acts. According to the reports of the Interstate Commerce Commission, it has power only to fix a maximum rate on the question of the reasonableness of rates, and to make an alternative order in cases of discrimination requiring its removal. Under such orders the railroads may, and have in the past within the limitations prescribed, fixed their rates in any manner they saw fit. During the past few years railroads have, under such orders, subordinated and set at naught the

rates prescribed by various State Legislatures and commissions and, in fact, the findings of the State Courts where the reasonableness of state-made rates had been passed upon and approved.

Let us keep in mind that it is only a short step to the assumption of jurisdiction over all other forms of commerce by the National Government and that, if permitted to go on without informing our people and appealing to Congress, the importance of the average state government in time to come will be small indeed compared with the great railway and industrial corporations which they formerly created and empowered.

PLAN OF ORGANIZATION AND ADEQUACY OF RATES

Judging by the representation made before the Newlands Committee, and now being made before Congressional Committees on Interstate Commerce, we have the proposal that all power be centralized in the hands of the Interstate Commerce Commission with various regional commissions, or, preferably, in the hands of a member of the President's Cabinet as the executive head, assisted by regional directors, much the same as we have at present. In both of these plans, the jurisdiction of the various States is left out of consideration entirely. In fact, it is proposed to usurp the sovereign power of the States and deny the right of State Legislatures, Commissions and Courts to have any effective jurisdiction over the regulation of their own domestic commerce.

The railroads complain that the present federal rule of rate-making implies that a rate must not only be reasonable but adequate, and they urgently contend "that Congress should establish a statutory rule of rate-making to provide that rates shall not only be reasonable but adequate—adequate to insure proper service, a reasonable return on the investment, and to attract new capital." But this leaves out of consideration entirely the question of excessive and wasteful investments and assumes that all railroads are entitled to a return. Further, it leaves out of view the cooperation of the States and the people, without which the remedies applied will not be as effective as they should be for the want of thorough-going local interest and responsibility therein. The sovereign power of the various States must, therefore, be retained to the end that the people may have an effective voice in these matters, through the medium of their local tribunals and their chosen state representatives. In no other way can the interest and responsibility of the people of the various States be retained in the successful maintenance and operation of these public highways. Otherwise the thought and attention of the people will turn to the promotion and the upbuilding of other forms of transportation, the changes in the art of which are so rapidly approaching. For these reasons, let it be emphasized, that the highly attractive appeal which could formerly be made to the popular imagination of the public in behalf of railway promotion, is not now possible, because other forms of rapid transportation can be and are being economically substituted to supply the local public service, and incidentally, they are now receiving the popular attention of the public.

It therefore follows that the railway systems of the country must, for the future, submit to a more careful public appraisalment than any which they have heretofore encountered. In connection with the rail-

road movement to establish rates that will not only be reasonable but adequate, effort must first be made to establish public confidence and interest by the railroads submitting to effective state and national regulation; by the adoption of a financial and operating policy in which the public is represented and has a voice; by the elimination of excessive investments and obsolescence; and by submission to public regulation and approval of large capital expenditures in extensions, additions and betterments—with particular reference to their character, extent and necessity therefor.

In consideration of the capital thus supervised and beneficially invested in the public service, and in view of the benefit and value that the people and all forms of property derive from an adequate railway system, the Nation, the States, and the municipality should, and undoubtedly would, under these conditions, provide for a guaranteed annual interest return on railway investments.

The associated state railroad commissions of the Nation, represented at Washington by their president, Hon. Charles E. Elmquist, and the executive committee, are at this time participating in the aforesaid Congressional hearings and making a strong counter-showing that made by the railway executives in behalf of the preservation of the States' rights for the future. In this behalf the Nevada Railroad Commission has authorized President Elmquist to enter the appearance of the Commission as a party of record and to represent it on the basis of the principles set forth in the following letter and telegram of authorization:

RAILROAD COMMISSION OF NEVADA
CARSON CITY, NEVADA, January 16, 1919

HON. CHARLES E. ELMQUIST, *President, National Association of Railway and Utilities Commissioners, 724 Eighteenth Street, N.W., Washington, D. C.*

DEAR SIR: Answering yours of the 8th, in re this Commission's attitude toward Director-General McAdoo's proposed five-year extension of government control and operation of railways, now being heard before the Senate committee:

We favor unified operation of railways under private management and are opposed to continued federal operation, because too burdensome upon the States. The present railway facilities, while necessary for war emergency, are excessive and wasteful in expenditure and capacity for the local requirements of the various States. Aside from war power, there is no constitutional method by which the States can be obligated to pay rates upon more than that portion of the property which is necessary and beneficially useful in taking care of their local requirements.

Further, unless provision is made with this end in view, local state taxes and the revenue therefrom will be diverted largely to other transportation agencies. Energetic preparation is now being made in autotruck lines in anticipation of the continuation of the present Railroad Administration policy.

We favor assumption by the Government of partnership equity in the railroads on some basis which will provide for war preparedness in order that future burdens incurred when the Nation is in peril may be equally spread over all classes of property, such as the arts and treasures, moneys and credits, and all fixed forms of property that do not contribute to the annual support of the railways and which are not affected by the Government's 25-per-cent horizontal increase in rates, instead of casting the entire burden upon the shipping and traveling public, as was done during the war now drawing to close. For these reasons, freights and fares should never have been increased, but instead the deficits in government railway operation should have been covered by taxation just as were the unusual expenditures for battleships, armaments and other war necessities.

We strongly urge that the railways be returned to private unified operation subject to regulations by the respective States and the National Government. In no other manner can this question be satisfactorily disposed of because

under any form of national regulation, effort will be made to place the burden of unnecessary and obsolete facilities upon the various States. In connection with said partnership equity, the Government should have a voice in the determination of the character and nature of expenditures for extensions, betterments and additions in the future, to the end that the public and the stockholders may be protected against exploitation. Regulation of the issuance and sale of securities heretofore employed does not go far enough to afford adequate protection.

RAILROAD COMMISSION OF NEVADA.

per J. F. SHAUGHNESSY,
First Associate Commissioner.

CARSON CITY, NEVADA, January 19, 1919.

HON. CHARLES E. ELMQUIST, *President, National Association of Railway and Utilities Commissioners, 724 Eighteenth Street, N.W., Washington, D.C.*

DEAR SIR: Your wire, "Please enter appearance and represent this Commission at hearing before House Committee beginning January 21 on Moon joint resolution proposing continued government control or ownership of telephone and telegraph systems," received.

We are opposed to such action because clearly subversive of our constitutional dual form of government and the people's liberties.

The States have thus far retained, exercised and enjoyed all the sovereign powers of the Parliament of England. Beware of the adoption of anything the equivalent of the slogan that "all roads lead to Washington," the simile of a national policy catch-phrase that finally resulted in centralizing everything at the seat of government to the exclusion of the various provinces and destroyed the Roman Empire.

Under the plea of greater efficiency by government operation of railway and wire services, the proposed section will lay a foundation by which the States will be stripped of their sovereignty and ultimately of statehood itself. We protest against the liberties of the people being curtailed and usurped by any process of drifting toward those completely centralized forms of government against which they are expending such fabulous sums of money and shedding their blood for the liberation of the people of the world.

For war-preparedness purposes, let the Government assume partnership equity. If necessary, and exercise a voice in matter of additions, extensions and expenditures, but leave the managerial and operating policy as it has heretofore been, subject to both state and national legislation.

In the United Farmers' Telephone and Telegraph case, this Commission has, on January 18, asserted its jurisdiction to regulate state business, on the ground that the property has not changed from private to government ownership; that, in so far as state business is concerned, the Government must be held to be a holding organization which, for operating purposes, has taken the place of the private telephone and telegraph companies; that the public obligation and the liability of so much of the property of said telegraph and telephone companies as is, and has heretofore been, properly assignable to each State for the rendering of state service is in no wise affected by changes made for the purpose of unified interstate operations; and that, therefore, the telephone and telegraph companies will be required to conform to the laws of this State in all matters relating to its purely domestic commerce.

This just and reasonable segregation of jurisdiction and control, we believe, will be sustained by the courts; but, if it is not, we urgently recommend that the matter be carried before the various Legislatures and Congress, with a view to promptly having an amendment to the Constitution of the United States submitted for ratification by the people for the purpose of returning these sovereign rights to the people at the earliest date possible.

RAILROAD COMMISSION OF NEVADA.

per J. F. SHAUGHNESSY.

The aforesaid statements exemplify the importance of the reserve power of the States over their domestic commerce, the practical exercise of which the people have never delegated to the Federal Government except during periods of national peril when the country has been at war. We find an exercise of the war power at the present time, but

the statutes which have been enacted under the war power are emergency legislation for the national security and defense. The necessity therefor having passed, the inherent rights of government formerly retained, exercised and enjoyed by the States must be reestablished for the welfare, comfort and convenience of the people. There is given below a résumé of the rights of the States and the people as recognized by the United States Supreme Court.

THE COMMERCE CLAUSE

The clause of the Constitution of the United States (art. 1, sec. 8) under which it is proposed to centralize all effective "police power" over commerce in the Federal Government, to the exclusion of its exercise by the legislative, executive and judicial departments of the various States and to the exclusion of its exercise by the people through the initiative and referendum branches of government—in other words, by direct vote of the people—reads as follows:

Congress shall have power to regulate commerce with foreign nations, among the several States, and with the Indian tribes.

Measured by the debate which ensued in the Constitutional Convention between those delegates who favored and those who opposed the formation of a strong central government, and the history of the period following the treaty of peace with Great Britain, and prior to the meeting of the Constitutional Convention, it is apparent that the "commerce clause" was adopted for the purpose of curing serious conflicts which existed as to commerce between the States in competitive trade with the other, and not because there were any difficulties surrounding the domestic commerce within said States. From these deliberations there was finally adopted the Constitution of the United States, which provides for a general government with power to do all those things for the States which they cannot do so well for themselves, but reserves for the several States those functions which can best be performed by state government.

Among the framers of the Constitution, the proponents of the federal plan construed the "commerce clause" and explained that it empowered the Federal Government to control interstate commerce only, and left the States and the people free to exercise all rights and powers which had not been specifically delegated. (The Federalist, 32-82.)

This wise division of jurisdiction between the State and Federal Government has been, since its delegation, and still is, the subject of controversy, deep thought and consideration. Every step of the process has been and is being vigorously contested by those who would centralize all rights and powers in the hands of the Federal Government to the exclusion of the various States. For these reasons, grave apprehension has been created in the public mind and is responsible for the passage of many of the amendments to the Constitution of the United States. It may be said that this perhaps applies to the first ten amendments and that they were submitted and passed largely from fear of encroachment by the National Government upon the rights and powers of the States and the people. The manifest intention of the people to reserve and exercise the inherent right and power of state government for their protection, safety and comfort is made clear by the Tenth

amendment to the Constitution of the United States, which reads as follows:

"Powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people."

SOVEREIGNTY AND POLICE POWER INSEPARABLE; WITHOUT IT STATES CANNOT EXIST

As an exemplification of what is said hereinbefore, and for the purpose of precisely defining our dual form of government, the importance of the inherent powers of the State and the reserved rights of the people, we set forth following extracts from decisions of the United States Supreme Court.

In the case of *Gibbons v. Ogden*, 9 Wheat. 1, the learned Chief Justice Marshall said:

"The subject to be regulated is 'commerce,' and our Constitution being, as we have said at the bar, one of enumeration and not of definition, to ascertain the extent of the power it becomes necessary to settle the meaning of the word. The counsel for the appellee would limit it to traffic, to buying and selling, or the interchange of commodities, and do not admit that it comprehends navigation. This would restrict a general term, applicable to many uses, to one of its significations. Commerce, undoubtedly, is traffic, but it is something more—it is intercourse."

It has been truly said that commerce, as the word is used in the Constitution, includes every part of which is indicated by the term. If this be the admitted meaning of the word, in its application to foreign nations it must carry the same meaning throughout the sentence, and remain a unit, unless there be some plain, intelligible cause which alters it.

The subject to which the power is next applied is commerce "among the States." The word "among" means intermingled with. A thing which is intermingled with others is intermingled with them. Commerce among the States cannot extend to the external boundary line of each State, but may be introduced into the interior.

It is not intended to say that these words comprehend that commerce, which is completely internal, which is carried on between man and man in a State, between different parts of the same State, and which does not extend to or between other States. Such a power would be inconvenient and is certainly unnecessary. Comprehensive as the word "among" is, it may very properly be limited to that commerce which concerns more States than one. The phrase "among the States" which would probably have been selected to indicate the completely internal traffic of a State, because it is not an apt phrase for that purpose; and the enumeration of the particular class of commerce to which the power was extended would not have been made had the intention been to extend the power to every description. The enumeration presupposes something not enumerated; and that something, if we regard the language of the subject of the enumeration, must be the exclusively internal commerce of a State. The genius and character of the whole Government seems to be, that its action is to be extended to all the external concerns of the nations, and to those internal concerns which affect the States generally; but not to those which are completely internal to a particular State, which do not affect other States, and with which it is unnecessary to interfere, for the purpose of executing some of the general powers of the Government. The completely internal commerce of a State, then, is considered as reserved for the State itself.

The sovereignty of a State extends to all persons and things within its control and is the supreme, absolute and uncontrollable power and right to govern. These sovereign States have full power to regulate within their limits the exercise of internal police, including in that general designation whatever will promote the peace, comfort, convenience and prosperity of their people. This embraces the construction of roads, canals and bridges and the establishment of ferries, and it can generally be exercised more wisely by the State than by a distant authority." (*Gilman v. Philadelphia*, 3 Wall. 713.)

When the people of the United Colonies separated from Great Britain, they changed the form, but not the substance, of their government. They retained for the purposes of government all the powers of the British Parliament, and through their State Constitutions, or other forms of social compact, undertook to give practical effect to such as they deemed necessary for the common good and the security of life and property. All the powers which they retained they committed to their respective States, unless in express terms or by implication reserved to themselves. Subsequently, when it was found necessary to establish a national government for national purposes, a part of the powers of the States and of the people of the States was granted to the United States and the people of the United States. This grant operated as a further limitation upon the powers of the States, so that now the governments of the States possess all the powers of the Parliament of England, except such as have been delegated to the United States or reserved by the people. The reservations by the people are shown in the prohibitions of the Constitutions.

When one becomes a member of society, he necessarily parts with some rights or privileges which, as an individual not affected by his relations to others, he might retain. "A body politic," as aptly defined in the preamble of the Constitution of Massachusetts, "is a social compact by which the whole people covenants with each citizen, and each citizen with the whole people, that all shall be governed by certain laws for the common good." This does not confer power upon the whole people to control rights which are purely and exclusively private (*Thorpe v. R. & B. Railroad Company*, 27 Vt. 143); but it does authorize the establishment of laws requiring each citizen to so conduct himself, and so use his own property, as not to unnecessarily injure another. This is the very essence of government, and has found expression in the maxim *Sic utere tuo ut alienum non ledas*. From this source come the police powers, which, as was said by Mr. Chief Justice Taney in the License Cases, 5 How. 583, "are nothing more or less than the powers of government inherent in every sovereignty; * * * that is to say, * * * the power to govern men and things." Under these powers the Government regulates the conduct of its citizens one toward another, and the manner in which each shall use his own property, when such regulation becomes necessary for the public good. In their exercise it has been customary in England from time immemorial, and in this country from its first colonization, to regulate ferries, common carriers, hackmen, bakers, millers, wharfingers, innkeepers, etc., and in so doing to fix a maximum of charge to be made for services rendered, accommodations furnished, and articles sold. To this day, statutes are to be found in many of the States upon some or all of these subjects; and we think it has never yet been successfully contended that such legislation came within any of the constitutional prohibitions against interference with private property. With the Fifth Amendment in force, Congress, in 1820, conferred power upon the City of Washington "to regulate * * * the rates of wharfage at private wharves, * * * the sweeping of chimneys, and to fix the rates of fees therefor, * * * and the weight and quality of bread" (3 Stat. 587, sec. 7); and, in 1848, "to make a necessary regulations respecting hackney carriages and the rates of fare of the same, and the rates of hauling by cartmen, wagoners, carmen, and draymen, and the rates of commission of auctioneers" (9 Id. 224, sec. 2).

"From this it is apparent that, down to the time of the adoption of the Fourteenth Amendment, it was not supposed that statutes regulating the use, or even the price of the use, of private property necessarily deprived an owner of his property without due process of law. Under some circumstances they may, but not under all. The amendment does not change the law in this particular; it simply prevents the States from doing that which will operate as such a deprivation." (*Munn v. Illinois*, 94 U. S. 124-125.)

"There is undoubtedly an internal commerce which is subject to the control of the States. The power delegated to Congress is limited to 'commerce among the several States, with foreign nations, and among the Indian tribes.' This limitation necessarily excludes from federal control all commerce not thus designated and of course that commerce which is carried on entirely within the limits of the State." (*The Daniel Ball v. United States*, 10 Wall. 557.)

"The internal commerce of a State—that is, the commerce wholly confined within its limits—is as much under its control as foreign or interstate commerce is under the control of the General Government." (*Sands v. Manistee River Imp. Co.*, 123 U. S. 288.)

"It cannot be doubted that the making of rates for transportation by railroad corporations along public highways, between points wholly within the limits of a State, is a subject primarily within the control of the State." (*Smyth v. Ames*, 169 U. S.; *Regan v. Mercantile Trust Co.*, 154 U. S. 413.)

"As the power to build and operate railways, to acquire land by condemnation, usually rests upon state authority, the Legislature may annex such conditions as they please with regard to intrastate transportation, and such other rules regarding interstate commerce as are not inconsistent with the general right of commerce to be free and unobstructed." (*Houston Ry. Co. v. Mayes*, 201 U. S. 321.)

"The roads are, therefore, engaged in both interstate commerce and that within the State. In the former, they are subject to the regulations of Congress; in the latter, to that of the State; and to enforce the proper relation between Congress and the State, the full control of each over commerce subject to its dominion must be preserved." (*Missouri Pacific Ry. Co. v. Larabee Flour Mills Co.*, 211 U. S. 612.)

"The grant of power to Congress over interstate commerce was to enable it to regulate such commerce, and not to give it authority to control the States in their exercise of the police power over local commerce. The grant of authority over a purely federal matter was not intended to destroy the local power always existing and carefully reserved to the States in the Tenth Amendment to the Constitution." (*North Carolina Child Labor Case*, 247 U. S. 273-4.) [Italics ours.]

The adjudications of this court with respect to the power of the States over the general subject of commerce are divisible into three classes: First, those in which the power of the State is exclusive; second, those in which the State may act in the absence of regulation by Congress; third, those in which the regulation of Congress is exclusive, and the State cannot interfere at all." (*Cincinnati Bridge Co. v. Kentucky*, 154 U. S. 204.)

Summarizing the cases above referred to and others of a like character, Judge Hughes, in the Minnesota rate case (230 U. S. 402-420), defines the scope and jurisdiction of the Act to regulate commerce and its relationship to the power of the State to regulate its own internal commerce, as follows:

It is competent for a State to govern its internal commerce, to provide local improvements to create and regulate local facilities, to adopt protective measures of a reasonable character in the interest of the health, safety, morals and welfare of its people, although interstate commerce may incidentally or indirectly be involved. Our system of government is a practical adjustment by which the national authority as conferred by the Constitution is maintained in its full scope without unnecessary loss of local efficiency. Where the subject is peculiarly one of local concern, and from its nature belongs to the class with which the State appropriately deals in making reasonable provision for local needs, it cannot be regarded as left to the unrestrained will of individuals because Congress has not acted, although it may have such a relation to interstate commerce as to be within the reach of the federal power. In such case Congress must be the judge of the necessity of federal action. Its paramount authority always enables it to intervene at its discretion for the complete and effective government of that which has been committed to its care, and, for this purpose and to this extent, in response to a conviction of national need, to displace local laws by substituting laws of its own. The successful working of our constitutional system has thus been made possible.

It has never been doubted that the State could, if it saw fit, build its own highways, canals and railroads. (*Railroad Company v. Maryland*, 21 Wall. 456, 470, 471.) It could build railroads traversing the entire State and thus join its border cities and commercial centers by new highways of internal intercourse to be always available upon reasonable terms. Such provision for local traffic might indeed alter relative advantages in competition, and, by virtue of economic forces, those engaged in interstate trade and transportation might find it necessary to make readjustments extending from market to market through a wide sphere of influence; but such action of the State would not for that reason be regarded as creating a direct restraint upon interstate commerce and as thus transcending the state power. Similarly, the authority of

the State to prescribe what shall be reasonable charges of common carriers for intrastate transportation, unless it be limited by the exertion of the constitutional power of Congress, is state-wide. As a power appropriate to the territorial jurisdiction of the State, it is not confined to a part of the State, but extends throughout the State—to its cities adjacent to its boundaries as well to those in the interior of the State. To say that this power exists, but that it may be exercised only in prescribing rates that are on an equal or higher basis than those that are fixed by the carrier for interstate transportation, is to maintain the power in name while denying it in fact. It is to assert that the exercise of the legislative judgment in determining what shall be the carrier's charge for the intrastate service is itself subject to the carrier's will. But the state-wide authority controls the carrier and is not controlled by it; and the idea that the power of the State to fix reasonable rates for its internal traffic is limited by the mere action of the carrier in laying an interstate rate to place across the State's border, is foreign to our jurisprudence.

If this authority of the State be restricted, it must be by virtue of the paramount power of Congress over interstate commerce and its instruments; and in view of the nature of the subject, a limitation may not be implied because a dormant federal power, that is, one which has not been exerted, but can only be found in the actual exercise of federal control in such measure as to exclude this action by the State which otherwise would clearly be within its province.

And construing the Act to regulate commerce, the Court said:

Congress did not undertake to say that the intrastate rates of interstate carriers should be reasonable or to invest its administrative agency with authority to determine their reasonableness. Neither by the original act nor its amendment, did Congress seek to establish a unified control over interstate and intrastate rates; it did not set up a standard for intrastate rates, prescribe, or authorize the Commission to prescribe, either maximum or minimum rates for intrastate traffic. It cannot be supposed that Congress sought to accomplish by indirection that which it expressly disclaimed, or attempted to override the accustomed authority of the States without the provision of a substitute. On the contrary, the fixing of reasonable rates for intrastate transportation was left where it had been found; that is, with the States and the agencies created by the States to deal with that subject. (*Missouri Pacific R. Co. v. Larabee Mills*, 211 U. S. 612, 620, 621.)

INDIRECT LEGISLATION SUBVERSIVE OF ALL GOVERNMENT AND THE LIBERTIES OF THE PEOPLE

According to the latter ruling (230 U. S. 352) it is inferentially suggested that Congress has paramount jurisdiction over state commerce, but it is important to bear in mind that, except for war-emergency purposes, the people have never yet permitted Congress to directly interfere with the right of local state government, which they have heretofore retained, exercised and enjoyed. Through indirect action, however, this end is being accomplished by the Federal Commission under the plea of necessity for the removal of discrimination covering local traffic between two States. However, we are confident that the people will not permit this encroachment when once they can fairly appreciate the seriousness of the burden which is being cast upon their local traffic under the wholesale plan of regulation authorized by the Federal Commission in the Shreveport-Texas and related cases. Regulation under this doctrine is resulting in confusion and serious injury to the States. It is the means through which state-made rates are being set aside without regard to many tested and adjudicated principles of regulation. It is also the means through which the Governor, the Attorney-General, and other state officers of Illinois were, during 1917, threatened with deportation and incarceration in jail at St. Louis by the Federal Court if they attempted to preserve their legislatively made 2-cent fares by an effort to enforce a decree of the state court.

Chicago, issued for the purpose of preventing the railroads from raising the fares 2.4 cents per mile in compliance with wholesale authorization granted to them by the Interstate Commerce Commission for the purpose of removing discrimination between East St. Louis and St. Louis, Mo.

On passing upon this conflict between state and federal jurisdiction, the United States Supreme Court (*I. C. R. R. v. Illinois*, 245 U. S. 493) reversed the Commission and the District Federal Court at St. Louis, and qualified the right of the Federal Commission to issue blanket authority to the railways to set aside a state-wide schedule of rates, in the following language:

Where a proceeding to remove unjust discrimination presents solely the question whether the carrier has improperly exercised its authority to initiate rates, the Commission may legally order, in general terms, the removal of the discrimination shown, leaving upon the carrier the burden of determining also the rates to and from which rates must be changed, in order to effect a removal of the discrimination. *But where, as here, there is a conflict between the federal and state authorities, the Commission's order cannot serve as a justification for disregarding a regulation or order issued under state authority, unless except so far as it is definite as to the territory or points to which it applies. For the power of the Commission is dominant only to the extent that it is found by it to be necessary to remove the existing discrimination from interstate traffic.* (Id. 509.) [Italics ours.]

Regarding the power of the Commission to take action the Court referred to the Shreveport-Texas case (234 U. S. 342), where it was

under the commerce clause of the Constitution, Congress has ample power to prevent the common instrumentalities of interstate and intrastate commerce, such as the railroads, from being used in their intrastate operations in such a manner as to affect injuriously traffic which is interstate.

Where unjust discrimination against interstate commerce arises out of the operation of intrastate rates this power may be exerted to remove the discrimination and thus whether the intrastate rates are maintained under a local statute or the voluntary act of the carrier.

Dealing with the Kansas 2-cent passenger-fare case and with the difficulties under which the States labor in their efforts to maintain just and reasonable rates for their domestic commerce and to prevent the imposition of unreasonable burdens incident to unnecessary and wasteful facilities by the railroads and the Interstate Commerce Commission, the United States Senator Joseph L. Bristow, speaking on behalf of the National Association of Railway Commissioners before the New York Committee, said:

The State is denied the opportunity to prove in court that the rates fixed by the Interstate Commerce Commission are excessive, unjust and ought not to be reduced. We think we ought to have that right just as Senator Cummins has asserted it. We cannot challenge in court the decision of the Interstate Commerce Commission, so it does not have to conform to the rules of legal evidence to the extent that State Commissions do. *It is not necessary, because the railroads are the only ones that can appeal from it* [an order of the Interstate Commerce Commission.]

In the Western Advanced-rate case, upon which the 2.4-cent fare for Illinois and the 2.6-cent fare for Kansas were determined, was not tried as a state common-law case has to try its cases. The rules prescribed in the Minnesota rate case for accounting were not followed in the trial of that case. But the States are to follow these rules because in case of an appeal or an injunction proceeding in the courts against a state rate the State has to meet the issues there arising to the rules laid down by the Supreme Court decisions. * * * The criticism of the Interstate Commerce Commission is they did not examine the traffic of Kansas in order to arrive at that conclusion [that fares should be

increased from 2 cents to 2.6 cents per mile], because they took the roads that cost less than one-fourth of the business, so far as Kansas is concerned. We took a look of them, examined the business of every one of them, and I think there ought to be some way by which the State can have the courts pass upon the rate while the Interstate Commerce Commission forces upon it, contrary to the judgment of its constituted authorities, as to what is fair and equitable.

For the reasons heretofore stated this method of procedure is preposterous, and less than no regulation at all for the reason that, if continued, it will make the railways superior to and destroy the sovereign power of the various States. Manifestly, therefore, the time is at hand when the people must move vigorously for the rehabilitation of the inherent protection which they have heretofore enjoyed through the medium of their Legislatures, courts, and other lawfully created tribunals, or for the future elect to submit to such exactions as their large public-utility corporations may choose to impose, tempered only by such modifications as the centralized regulating authorities at Washington may see fit to grant.

STATES MAY BE DESTROYED BY LOSS OF TAXATION

Another ready and convenient means of destroying the States would be the withdrawal of the right of the States to tax railroad and other utility property upon which so large a proportion of the taxes and bonds of the States, counties and municipalities depend.

In this behalf, it was urged on the floor of the Senate during the consideration and passage of the present Federal Control Act, that Congress had the power to take from the States their rights to tax railroad property during the time that it is within the control and operation of the Government. In support of this view, the case of *McCulloch v. Maryland*, 4 Wheaton (U. S. Supreme Court Decisions), pages 432-433 was cited, wherein Chief Justice Marshall said:

If the States may tax one instrument employed by the Nation in the execution of its powers, they may tax any and every instrument. They may tax the mail; they may tax the mint; they may tax patent rights; they may tax judicial processes; they may tax all the means employed by the Government to a degree which would defeat all the ends of government. This was not intended by the American people. They did not design to make their government dependent on the States.

The people of all the States have created the General Government and have conferred upon it the general power of taxation. The people of all the States and the States themselves, are represented in Congress, and by their representatives, exercise this power. *When they tax a chartered institution of the States, they tax their constituents, and these taxes must be uniform.* [Italics ours.]

But, when the State taxes the operations of the Government of the United States, it acts upon institutions created not by their own constituents, but upon the people over whom they claim no control. It acts upon the measures of government created by others as well as themselves, for the benefit of others in common with themselves.

The court has bestowed on this subject its most deliberate consideration. The result is a conviction that the States have no power, by taxation or otherwise, to retard, impede, burden or in any manner control the operations of the constitutional laws enacted by Congress to carry into execution the powers invested in the General Government. This is, we think, the unavoidable consequence of that supremacy which the Constitution has declared.

This is the adjudicated law of the land and it therefore follows that if the will of those who contend for centralization of all activities in the hands of the Federal Government shall prevail, bankruptcy or the severest retrenchment, in all organized state government must inevitably

tably follow, and, therefore, the right of local self-government shall be forfeited. Likewise, all initiative and training in the art of government shall be forfeited and the initiative in all remedial and progressive efforts which have heretofore sprung from the States shall be smothered, and the extent of community enterprise and development shall, thereafter, be promoted or limited by the will of the majority of the dominant party which may be able to perpetuate itself in power at Washington, D. C.

FUTURE FRAUGHT WITH GRAVE DANGER AND UNCERTAINTY

The aforesaid adjudicated powers serve to illustrate how far-reaching and important are the inherent rights which the various States have, since the birth of the Nation, exercised and enjoyed, and which it is now proposed shall be forfeited. The entire question is fraught with the gravest uncertainty and danger—danger that the liberties of the people will be sacrificed by the destruction of their long-established and successfully tested local government for a completely centralized form that may easily result in chaos, confusion and uncertainty and ultimately break down of its own weight.

Experience teaches that a completely centralized government, the seat of which is distantly removed from the people, while an attractive ideal, is not a panacea for all the ills, real or imaginary, that beset the people. If this change in government is brought about, it is the beginning of the end of the various States as political entities; and in their stead the establishment of regional subdivisions and control of politics and government, and thereafter no one can foretell to what end our country may drift. History, which has the uncomfortable habit of repeating itself, teaches that the Roman Empire fell, not because the provinces of that nation exercised state control, but because, through the growth of centralization at Rome, there was finally abolished all political independence outside the city of Rome. Dealing with the inestimable value and effectiveness of our dual form of government, and especially with the fact that the efficiency of our National Government thus far attained is because our States and local communities are self-governing and exercise self-governing functions and are accustomed and trained to be self-governing, John Fiske said:

A perdurable government must be that which achieves national society on a grand scale without weakening the sense of personal and local independence, for with the body politic this power of freedom is the red-blood corpuscles of the blood which carry life with it; *it makes the difference between a society of self-respecting men and women and a society of puppets. Your Nation may have art, poetry and science—all the refinements of civilized life, all the comforts and safeguards that human ingenuity can devise—but if it loses this spirit of freedom, of local independence, it is dimmed and deserves to be dimmed.* [Italics ours.]

The danger of following in the footsteps of the Roman Empire lies in the loss of the opportunity which is now afforded under our present dual form of government for the education of officers and statesmen from among the people themselves, and who now give efficient service in response to the sentiment and will of the communities which they serve. In lieu thereof, no matter how selected, or how representative and safeguarded the machinery of selection may be, under a completely centralized form of government our officers and statesmen would be educated from one common school at the seat of government and, therefore, there would be an exceedingly dangerous tendency

toward the growth of an autocracy, and for our future public policy and representation, such as it might be, to be dictated from Washington.

REMEDIAL LEGISLATION SPRUNG FROM THE STATE

It should be emphasized, in passing, that practically all of the more advanced forms of remedial legislation enacted by Congress during the past have, almost without exception, first originated and been tried out by some State or States before being adopted by Congress. Without the maintenance of the present wise distribution of power between state and national governments, provided for by our forefathers, this initiative and test of experience in legislation will, of course, pass out of existence, to the detriment of the Nation and a dangerous sacrifice of the liberties of the people.

PEOPLE MUST GUARD BIRTHRIGHT

It is urged by those favoring centralization that we may always appeal to Congress, and that national regulation is more effective than state. While it is true that some things can be better done by the National Government acting exclusively, it does not follow that the States should surrender their sovereign power over their most important functions of government.

Following the centralization of the power of regulation and control of the railways in the hands of the Federal Government, if it is done doubtless the next step will be the centralization of all railway and interstate utility taxation in the hands of the Federal Government to the exclusion of the various States, and from this there is no limit to the extent to which the powers of the various State Governments may be usurped. It is our firm belief that the most satisfying and enduring form of government is to be secured for the people by the maintenance of both national and state jurisdictions. This is our present form of government and, as it is our fundamental sovereign right and most cherished inheritance from our forefathers, it should be jealously guarded and not thoughtlessly and indifferently relinquished.

In the event of centralization, it is true that direct appeal may be made to Congress, made up as it is of representatives coming directly from the people of every State and, in this connection, it is fair to assume that they will invariably be conscientious, hard-working and intelligent officers answerable directly to the people. But Congress has before it always some great issue of national importance upon which practically all thought and action are centered, to the exclusion of matters of local importance, and therefore it would be impossible to secure the remedial action which is now promptly afforded by the various State Legislatures. In other words, the ability of the people of the various States to secure legislation to meet their peculiar local situations, as they arise from time to time, would be made exceedingly difficult, and it would restrict such efforts to the point of whether or not the legislation desired fits the will of the people throughout the more populous States, because, under centralized government, all vital legislation enacted would then be of uniform and nation-wide application.

Conceding that the people shall have a voice at Washington through the medium of their chosen representatives, the danger lies in the fact that their efforts may be, and doubtless would be, greatly hampered

restricted by the mammoth bureaucratic organization that would, the centralization of all activities, of necessity grow up at the capital. The environment which surrounds the capital, unfortunately, is very pro-East and anti-West. Our country is so vast in extent that the people of the East have no true conception of the western part of the Nation, especially all of that great section lying west of the Mississippi River. Seemingly, many know infinitely more about the continent of Europe than they do about this great western empire. There is a marked difference in the spirit and morale of the people, and their progressiveness in the exercise of government throughout the West as compared with Eastern States. Means are not afforded the Western States for the exercise of the people's voice through the medium of the "initiative and referendum," whereas, on the other hand, this improved medium of governmental machinery by which the people are enabled to enact remedial laws on the one hand, and, on the other, to veto bad laws, when legislative action is insufficient or unsatisfactory, has been quite generally adopted by the Western States. In this behalf, it is not only interesting, but highly significant of an ultraconservative eastern viewpoint, to note that when the initiative and referendum was proposed for adoption in the State of New York during the last campaign, its adoption was criticized by one of the leading papers of Washington, D. C., on the ground that "it was aristocratic in its origin and that, while it had attained a vogue in the West, it has thus far never established even a foothold in the East." In general, the West is better known among eastern people as a section made up of Indian reservations and rich natural resources, the knowledge of which may, and from their viewpoint should be, drawn upon for the support and prosperity of eastern industrial and financial centers, rather than it is from actual contact or knowledge of its people and their needs. The bulk of the industry, wealth and population of the country are east of the Mississippi and north of the Ohio and Potomac Rivers at the present time. Under completely centralized government, this centralization would be greatly intensified, from which it might easily follow that ultimately there would be, if not a reapportionment of our representation in Congress, at least a direct referendum vote on legislation, and, thereafter, the dangerous possibility that the great western and southern producing States would be treated more in the light of colonies than as integral parts of the Nation.

In conclusion, we are sure that the importance of the continued maintenance of our dual form of government, both state and national, cannot be overemphasized, and that it behooves all citizens, interested in the success of our great republic, to refuse to in any way temporize on this question, whatever the pretext may be, and to courageously stand upon the maintenance and the efficient exercise of the powers reserved to our local State Governments. In this behalf, if the Tenth Amendment to the Constitution of the United States does not prove efficacious, the people must be prepared to take back those rights and powers which the present convenience may prove to have been unwisely relinquished.

Respectfully submitted,

J. F. SHAUGHNESSY,
Acting Chairman.

W. H. SIMMONS,
Commissioner.

H. WALKER, *Secretary.*

PASSENGER FARES BEFORE THE RAILROAD ADMINISTRATION

There is set forth below correspondence with the Railroad Administration regarding the establishment of 3-cent fares on the lines of government-operated railways within the States of Nevada, Arizona and New Mexico:

CARSON CITY, NEVADA, November 14, 1918.

HON. EDWARD CHAMBERS, *Director of Traffic, United States Railroad Administration, Washington, D. C.*

My DEAR MR. CHAMBERS: Prior to my departure from Washington, on or about September 25, I had a conference with you in your office, and among other things I raised, for your information and consideration, the fact that the passenger fares on the government-controlled and operated railways within Nevada, Arizona, and New Mexico are basically 4 cents per mile on the main lines and from 4 to 5 cents per mile on the branch lines, whereas throughout the State of Wyoming, Montana, Utah, Idaho and eastern Washington and Oregon the fares are uniformly 3 cents per mile.

As the trunk lines serving these territories operate under practically identical circumstances and conditions, I believe you conceded that there was no justification for the discrimination in question, and if I recall correctly you stated that you understood from a conference you had had with Mr. Gerri Fort that an adjustment would soon be made whereby 3-cent passenger fares would be basically applied to traffic in Nevada, Arizona, and New Mexico.

As a result of the withdrawal of scrip-book and round-trip privileges which our people enjoyed prior to government operation, the increase in their transportation charges ranges from 25 per cent to 86.4 per cent, and they are complaining bitterly regarding the discrimination which is being imposed upon them by the Government, compared to other sections of the intermountain country.

I may also state, for your information, that I conferred with Mr. Gerri Fort, Assistant Director of Traffic, on two occasions during the summer regarding the matter of this adjustment. The questions relating to sparsity of population and traffic density were reviewed. While the population is sparse in Nevada, Arizona and New Mexico, it is equally sparse throughout Wyoming and Utah along the line of the Union Pacific Railroad, and the density of traffic covering both interstate and state traffic on practically all of the transcontinental lines is fairly comparable.

In this behalf, I set forth for your information a table which clearly portrays the situation:

STATISTICS, INTERSTATE COMMERCE COMMISSION, FOR JUNE 30, 1915 (page 281)

Railroads	Number passengers carried	Passenger mileage	Passenger revenue	Passenger-train revenue		Revenue per passenger per mile
				Per mile of road	Per train-mile	
Southern Pacific.....	36,893,106	1,318,800,631	\$28,136,546	\$5.014	\$1.57	\$0.0212
Union Pacific.....	4,761,935	518,411,788	10,061,903	3.908	1.81	.0193
Northern Pacific.....	8,756,784	600,278,153	13,619,114	2.593	1.49	.0226
Great Northern.....	8,468,317	575,020,556	13,164,357	2.254	1.44	.0222
Chicago, Milwaukee and St. Paul.....	16,065,456	858,452,321	17,962,428	2.426	1.81	.0206
Chicago, Burlington and Quincy.....	22,708,392	1,079,284,875	20,185,564	2.726	1.39	.0187
Chicago and Northwestern.....	33,079,550	1,130,297,641	20,528,443	3.205	1.22	.0183
Atchafalpa, Topeka and Santa Fe.....	11,810,565	1,133,843,201	24,117,978	3.601	1.39	.0203

Will you kindly advise if the Railroad Administration will make this adjustment in the near future, or if there are difficulties in the way of such action being taken promptly, will you kindly indicate what they are? As before stated, our people are clearly unable to see why they should not receive the same protection from the Government that is being accorded other sections of the country.

With best wishes, I am

Very truly yours,

J. F. SHAUGHNESSY,
First Associate Commissioner,
Railroad Commission of Nevada.

During the meeting of the National Association of Railway Commissioners at Washington, D. C., November 12 to 14, 1918, inclusive, Commissioners Shaughnessy, Jones, and Williams of the Railroad Commissions of Nevada, Arizona, and New Mexico were appointed a committee of three to negotiate with the Railroad Administration for the establishment of 3-cent fares. This the committee has been doing, but after a careful analysis of the situation within said States, as shown above for Nevada, Director C. A. Prouty, under date of January 22, 1919, has decided that the Railroad Administration will not take any action at this time. Mr. Prouty's letter follows:

January 22, 1919.

HON. HUGH H. WILLIAMS, *Chairman, State Corporation Commission, Santa Fe, N. M.*

DEAR MR. WILLIAMS: Replying to yours of January 17, 1919, in reference to 3-cent fare in States of New Mexico, Arizona, and Nevada:

I have discussed this matter with Mr. Chambers and both he and I believe that a 3-cent fare ought to be applied, upon main lines at least, in those States. To make this reduction at the present time would, however, amount to a serious diminution in the income of the railroads under government control. Apparently that income is not sufficient to pay operating expenses and rental. Until the financial situation is fully developed, therefore, no action will be taken, but you may rest assured that both he and I entertain the opinion above expressed, and it is possible that at some future time we may see our way clear to give practical effect to that opinion.

Very truly yours,

C. A. PROUTY, *Director.*

Notwithstanding that all 2-cent-fare territory throughout the Eastern and Middle Western States has been increased by the Railroad Administration to a 3-cent-fare basis or 50 per cent, the Administration has persistently, ever since such action was taken last summer, refused to equalize our 4- and 5-cent territory downward to a 3-cent basis on the plea that it would result in a "diminution of income." Three-cent fares have, for a number of years, been and are today effective throughout Wyoming, Idaho, Montana, Utah, and eastern Washington and Oregon; likewise the Territory of Oklahoma was developed on the basis of 3-cent fares, and many other States and Territories have been so developed. The question of density of traffic and population has therefore not been a controlling consideration.

In addition to the administration's refusal to grant equitable relief to Nevada, Arizona, and New Mexico, it should also be noted that scrip or mileage books of all kinds which formerly under private railway operation gave the purchasers thereof the benefit of 2½- and 3-cent fares have been withdrawn from sale and therefore fares are at the present time on government-operated lines within said States 4 cents per mile on the main lines and 5 cents per mile on the branch lines. From the standpoint of justice or reasonable public regulation, it must, in view of these facts, be stated that the Railroad Administration has failed to make good.

GOVERNMENT REFUSES TO PREVENT SCRAPPING OF LAS VEGAS AND TONOPAH RAILROAD—DECLINES REQUEST OF STATE COMMISSION TO TAKE STEPS TO RETAIN TRANSPORTATION SERVICE IN SOUTHERN NEVADA.

Because the United States Railroad Administration diverted all the traffic between Goldfield, Tonopah, and southern California points from

the Las Vegas and Tonopah Railroad to the Tonopah and Tidewater Railroad, the direct short-line route, the said Las Vegas and Tonopah Railroad found that it could not pay operating expenses and taxes and therefore decided to go out of business. The Railroad Commission of Nevada, by direct representation through Commissioner Shaughnessy at Washington, and by extended correspondence, endeavored to have the Railroad Administration take over said line on behalf of the Salt Lake System for lease, operation and control, as has heretofore been the practice under private system railway operation.

The Railroad Commission, after exhausting every effort possible, has been unsuccessful in securing the retention of this important service facility, and the line is now being taken up and the material sold for scrap. As indicative of the argument which was advanced on behalf of the Railroad Commission, the excerpts of correspondence set forth below which passed between it and the Railroad Administration will make the matter clear.

Among other things, the Railroad Commission urged the necessity of continuing service over the road and suggested a method by which the Government might aid in accomplishing this end. The letter was addressed to Hon. John Barton Payne, General Counsel for the Railroad Administration, and dated December 12, 1918. It said:

We have your letters of November 25 and 29, *in re* abandonment of the Las Vegas and Tonopah Railroad.

We have been hopeful that the result of your presentation of the matter at conference would be favorable to the action recommended by the Nevada Commission. In this behalf, however, your letter of the 29th is rather obscurely stating that you have advice from President J. Ross Clark stating that they have decided to abandon and dismantle the road, and that, if anything is to be done to preserve the road, prompt action will be necessary. This is not sufficiently clear to enable us to proceed intelligently in the premises, because we are unable to anticipate what the final decision of the administration will be.

May we be pardoned if we state that it is not our understanding that the Government would find itself, at the end of federal control, with a large investment in scattered short lines which would, at the least, be very precarious. On the contrary, we have been led to believe that, by the elimination of separate overhead expenses, separate supervising forces and separate maintenance and shop organizations, sufficient economy could be effected under government operation and control to make the short-line railroads profitable branches of the federal system of railroads.

In this connection, there were released from federal control and operation by the Railroad Administration during the past summer the following named Nevada short-line railroads. It will be observed that, in addition to the mileage, the overhead expenses for executive officers and legal expenses and the expenses of clerical forces to general offices, it shows that a total of \$180,000 would have been saved from this source alone and without regard to separate supervising, maintenance and shop organizations, if the Government had retained them in federal control and operation:

Railroad	General overhead expenses charged to Nevada	Mileage
Bullfrog Goldfield.....	\$7,574.91	86.59
Las Vegas and Tonopah.....	13,263.96	118.82
Nevada-California-Oregon.....	4,539.64	27.00
Nevada Central.....	3,794.33	93.30
Nevada Copper Belt.....	13,330.86	41.47
Nevada Northern.....	68,397.83	165.10
Nevada Transportation Co. (Eureka-Nevada).....	10,003.41	84.00
Pioche Pacific.....	2,349.86	18.00
Tonopah and Goldfield.....	27,614.59	110.02
Tonopah and Tidewater.....	698.46	30.95
Virginia and Truckee.....	31,199.49	67.48
Total.....	\$182,767.34	

The injustice of this segregation of independently operated short lines is emphasized by referring to the fact that in the matter of the branch lines operated by the large trunk-line systems these latter have been retained in federal control and operation and have received all of the benefits accruing from the purchase of equipment, materials and supplies in quantity and at lower rates than can be purchased by the independent short lines. In addition thereto, these system short lines are free from very heavy freight charges covering the movement of materials and supplies which the short-line railroads independently operated must bear from the source of supply to the point of their intersection with the trunk lines. The Callente and Ploche Railroad on the Salt Lake system; the Nevada and California and the Fernley-Lassen Railroads on the Central Pacific; and the branch of the Western Pacific running into Reno, are cases in point.

NOT A QUESTION OF PROFIT

Of course, in this behalf, we recognize that it would be impossible to make each and every constituent portion of the great governmental system profitable or self-supporting when separately considered, no more so than might be expected or accomplished if effort were made to make each and every branch of the postal service of the Nation self-supporting. The question, therefore, should be approached from a broader horizon than the profitableness of each and every railroad of the national system of railways. Otherwise, the public side of the question will be left out of view, and there will be diminution of service under government, as compared with private operation.

SHORT LINES INDISPENSABLE

Many short-line railroads of the country, and in fact a large number of trans-state railroads which serve an important element of the country's population and are indispensable to the development of many essential resources, are struggling to make their financial ends meet. Based on present conditions and prospects, these investments represent mistaken faith and standards.

PUBLIC ENTITLED TO SERVICE

While the Government cannot be expected to make good in whole these losing ventures, it can at least provide a means whereby they may be tided over and even assisted, to some extent, financially, until such time as the readjustment period, or the development of our country has reached a stage where they may be enabled to become self-supporting. By the very nature of the policy which has been inaugurated and is followed by the great trunk-line systems, there are provided everincreasing standards of heavy equipment which supply the public, not only upon their own systems, but, by interchange, the public served by the weaker and shorter line railroads as well.

GOVERNMENT OBLIGATED TO AID

Further, this policy has forced the building and operation of short and independent weak-line railroads with heavy standard-gage tracks, bridges and locomotives, in order to take care of said interchange of trunk-line railway-car equipment, all of which is in many instances, far in excess of the reasonable and economical needs of the territory they serve. This burden has broken down some short lines and ultimately will destroy others unless some form of relief is afforded by the Government or the trunk-line systems which they feed, or by both the Government and said systems. As originators and distributors of traffic for the trunk-line systems—in other words, feeders—these lines are highly desirable and valuable to any form of unified nation-wide operation of the railways and, therefore, under present federal control and operation, it is our view that the Government is clearly obligated, when these lines break down and can go no farther under independent operation, to step in and protect the public served thereby.

WANTS ROADS OPERATED

Because of the foregoing reasons, we feel that the Railroad Administration should extend relief to the people of Nevada and the stockholders of the Las Vegas and Tonopah Railroad by authorizing the Salt Lake System to take over said line under lease contract for continued operation as a part of said Salt Lake System.

In response to the foregoing, the Railroad Administration, through its general counsel, John Barton Payne, replied as follows:

"CAN DO NOTHING"

I agree with so much of your letter of the 12th, *re* Las Vegas and Tonopah Railroad, that I deeply regret the period of federal control is so short that it does not seem possible to do the things which manifestly should be done if it seemed possible.

So many questions *re* the short-line railroads have been presented from time to time that it seems imperative that we should adopt the policy of lending to local people or local organizations when necessary to save a short-line railroad, but where there is no local organization and no group of local people offering to do anything, it had not seemed possible for the Railroad Administration to take the initiative, and that is the situation here.

I regret very much there seems nothing we can do.

Writing to J. Ross Clark, president of the road, the Railroad Administration expressed a desire on the part of the State to retain the service facility, and asked if there was not something he could suggest that would avoid it being scrapped. With the letter was a copy of a communication sent to John Barton Payne. The following reply was received from Mr. Clark:

J. ROSS CLARK CONCURS

I have read with interest your communication of the 12th instant, addressed to General Counsel Payne of the United States Railroad Administration, regarding policy that should be adopted by the Federal Railroad Administration toward short-line railroads, and fully concur in all opinions expressed therein.

"NO GOVERNMENT AID IN SIGHT"

As you have already been advised in previous correspondence, service on the Las Vegas and Tonopah Railroad line, between Las Vegas and Beatty, October 31 last, and we are now engaged in discontinuing the line, several miles of track having already been taken up. For the details stated in full in our previous correspondence with you on this subject, there is the only course left for the stockholders of this railroad corporation to pursue. There did not appear to be any reasonable prospect of any help being expected by the Federal Government, and the stockholders could not see their way to stand any longer the very heavy loss of continued operation of this line. We appreciate fully the efforts of the Railroad Commission of Nevada to bring about some arrangement by which the operation of this line of railroad could be continued, and regret very much that a favorable solution of the problem could not be worked out.

IN RE SAFETY IN TRAIN OPERATION

The Railroad Administration has created a special Safety Train Control Committee to investigate and report on the adoption of the most approved safety devices for the protection of the traveling public and the railway employees.

The importance of prompt action being taken in providing for the most approved safety devices is emphasized by the statistics covering railway accidents during the six-year period, 1911 to 1916, inclusive, from which it will be found that 777 passengers and 2,814 employees have been killed and that 40,274 passengers and 32,875 employees have been injured.

There is set forth below copy of correspondence relating to safety in train operation:

WASHINGTON, D. C., June 22, 1917

(PERSONAL)

Subject: Hagenbeck-Wallace Circus Train
Wreck. Early Reports Show 60
Killed and 129 Injured.

HON. WILLIAM G. MCADOO, *Director-General of Railways, Washington.*

DEAR MR. MCADOO: Early press dispatches state that 60 people were killed and 129 injured in the Hagenbeck-Wallace circus train wreck on the Milwaukee Road.

Central at East Ivanhoe, Ind., June 22, 1918, by rear-end collision with an empty troop train of all-steel Pullman cars traveling over the same line and in the same direction. It is stated that the engineer of the empty troop train ran by two block signals, two red-light signals, and a fusee placed between the rails, which threw off a brilliant red light, visible for a long distance. Each and every one of these signals meant stop at once, and yet, from reports, there was no observance whatever on the part of the engineer of the following train.

Initial report from a prominent official of the Railroad Company states that he was unable to account for the failure of the following train to respond to the several danger or stop signals displayed on any other ground than that the engineer, who was at that time missing, must have been dead at his post when passing these signals—not an unreasonable deduction by any means when we consider the possibility of the engineer being stricken with heart failure, apoplexy or paralysis. The engineer, however, has since been found, and explains that because of escaping steam he was unable to see the danger signals in time to avoid the collision.

Viewing the matter from its most charitable aspect, the best that can be said in extenuation of the accident is that it was probably due in part to defective equipment and in part to human fallibility; but, whatever the cause, there is recorded and added to the almost countless numbers that have gone before from similar accidents, another large toll of dead and injured people.

It would unduly take up your time for me to detail a list of the collisions and losses in lives which have occurred, in spite of the most exacting discipline of the highest order to be found perhaps in any line of industry and which, when all is said, has been largely due to human fallibility.

For a number of years past the Government has been investigating the question as to whether it should require railroads to furnish adequate safeguards and protection to the traveling public by the adoption of an automatic device which would, as nearly as possible, provide against such cases of human fallibility and loss of life as we now again have prominently emphasized by the Hagenbeek-Wallace circus train wreck. I refer to the automatic train-stop which has been endorsed by the Interstate Commerce Commission and its adoption as a necessary safety device recommended. Congress has had the matter of its requirement by statute under consideration, but thus far no action has been taken. Briefly stated, this train-control device automatically sets the air-brakes and stops a train if, by any chance, the engineer has failed to observe (as in this case) and is passing a semaphore signal indicating danger or stop. Railway operating officials refer with pride (and justly so) to the record that has thus far been made in the movement of an exceedingly large number of troops with only negligible loss of life, but the highest form of safety-factor device against collisions is lacking, and we know not the hour when there will be collisions and large loss of life among our soldier boys. The answer, of course, is that everything we do in this life is beset with the bane of human fallibility, and this is true. But it appeals to me that it is not beyond the range of possibility that the President has, by his wonderful convoy organization, made sea transportation for the boys between here and Europe as safe, if not more so, than is railroad transportation within our own country. A transport on the sea in the event of impending collision with another vessel, or even with a torpedo launched at it with terrific speed, may often alter its course or by zig-zagging avoid the vessel or the torpedo. Likewise, an automobile traveling along the highway at a high rate of speed can, if it finds another automobile bound in the same direction, standing in the road, or one approaching from the opposite direction at high speed, turn out around it and avoid collision. But not so with two trains moving over the same line and in the same or opposite directions, because there is no opportunity to rectify a mistake or bad judgment or inability to see a danger signal by the simple expedient of turning out or changing the course of one or both of the trains temporarily, as is the case with ship or automobile transportation.

The consequences of these railroad train collisions are so terrible and so far-reaching in their effects that every precaution should be taken to prevent their occurrence, and this can be accomplished with great ultimate profit to the Nation in the lives and property saved by supplementing the exceedingly fine morale and efficiency of our railway operating organization by the adoption of automatic train stops. The Interstate Commerce Commission has a complete record covering the many collisions, their causes and the number of lives lost during the past several years. Also, I understand it has authoritative data on

the cost of automatic train stops and reports covering their efficiency tested. There are a number of these devices upon the market which are unproductive for want of railway support and patronage, but there is one which has been in successful operation during the past four years on 125 miles of track between Chicago and Danville, Ill., on the Chicago and Eastern Illinois Railway, which should afford a guide as to the efficiency of automatic train stops, including such improvements thereupon, if necessary, as this actual continued experience may justify.

Supplementing what I have said hereinabove, may I not submit herewith your information an excerpt from my testimony on the question here under discussion, given before the Newlands Committee at Washington, D. C., December 17, 1917?

In conclusion, Mr. Director-General, may I not earnestly recommend that this highly important question be given your able consideration and, if it seems wise, the analysis which I trust it will, that you endorse the enactment of legislation or by executive order provide for the adoption of automatic train-stops as a view of preventing further injury and loss of life of the traveling public, our soldier boys who are moving in large volume and entitled to the best care and protection.

Very respectfully yours,

J. F. SHAUGHNESSY

EXCERPT FROM TESTIMONY OF JOHN F. SHAUGHNESSY BEFORE NEWLANDS COMMITTEE AT WASHINGTON, D. C., DECEMBER 17, 1917.

Mr. Shaughnessy: The train facilities used by the carriers in furnishing through passenger service are without question the finest to be found in the world, but there is reason to seriously question whether the cost thereof is becoming too burdensome to both the railways and the traveling public. The average passenger train today is six cars and locomotive, comprising baggage, and express cars, coaches, and dining, sleeping, and observation cars.

Estimating that all-steel cars are used, which the railways have been adopting as rapidly as possible, the dead-weight tonnage of such a train will average approximately 550 tons. The average train capacity is not more than 150 passengers, whereas the average load is 54 passengers or 36 per cent of capacity. Further, the analysis indicates that in the use of the modern six-car all-steel trains an average of 10 tons of equipment is used in transporting each passenger. Is this not an unreasonable waste? No such tonnage is reasonably necessary, and unless steps are taken to correct it, the cost of the local passenger business will, due to improvements in the art of transportation by self-propelled overland vehicles, be taken from the rail carrier. In this connection it is interesting to note the rapid growth of automobile and autostage traffic, and to keep in mind that an attractive and comfortable service is furnished through this medium by the use of facilities averaging about one-fourth ton per passenger, as compared with the aforesaid 10 tons per passenger. In my opinion, passenger-train weight should be cut right in two, and the weight at large given the benefit of as economical a passenger service as is consistent with comfort and safety. The present passenger facilities are, for the most reasons, wasteful and place too heavy a burden upon the public in carrying and maintenance costs and investment. No regulation of this feature of railway service has been undertaken on behalf of the public. Unless it is put in hand the carriers are free to go on increasing the capacity of their facilities and likewise the strength of their tracks, because the former forces the latter and thus building into the future and increasing the investment sufficient to not only offset the normal increase which takes place in traffic, but ultimately to justify, under the Commission's policy in the Illinois case, 4-cent local rates.

Carrying the analysis a step further, the railway operating statistics show that freight-carrying equipment has largely outgrown reasonable proportion. That it is cumbersome and expensive in investment, operation, and maintenance; and that it does not show the operating and service efficiency that might reasonably be expected. The average dead weight of cars and engines in the lots for 1915 was approximately 24 tons per car and their average carrying capacity was 40 tons each, but the average load of freight carried was only 13.8 tons per car, or a load factor of 34 per cent. From this it will be seen that a nonproductive dead weight of 65 per cent in equipment was hauled during the year 1915. Besides the waste involved in investment, operation, and maintenance of the entire plant these excess-capacity facilities are a

sible for a very slow freight movement to the disadvantage of the
ing public. Regulation and relief should be provided for along these
* * *

Esch: Just one other question, with reference to efficiency. I think you
ated, if I recollect your figures rightly, that the dead-weight tonnage of
average passenger train now is 550 tons?

Shaughnessy: Yes; that is, figuring on the all-steel equipment.

Esch: And containing six cars?

Shaughnessy: Yes, sir.

Esch: With a passenger capacity of 150?

Shaughnessy: Yes, sir.

Esch: But an average patronage of 54 to the train?

Shaughnessy: Yes, sir.

Esch: And you deduce from that that that would mean 10 tons dead
per passenger?

Shaughnessy: Yes, sir.

Esch: And I infer from what you said that that was inefficiency?

Shaughnessy: Yes, sir.

Esch: But how would you overcome that? If the people insist that they
be carried in steel cars, would you want to go back to the wooden shells
e used to have, with the frightful disasters of telescoping and burning
in the wrecks? How would you overcome that?

Shaughnessy: My view on that may be somewhat different, Mr. Esch.
first place I do not believe that the all-steel equipment has provided an
e safety-factor. Of course, it is somewhat more safe than the old
cars, but not greatly so. For instance, today the all-steel equipment,
you are in a very severe collision, telescopes and breaks up, perhaps not
same extent that the old wooden equipment did; but as to the fire
—the fire hazard in the old days came from the use of lamps and gas;
that is largely removed by the use of electrical equipment, and it is my
ion that wooden equipment could be substituted, especially at this time,
t advantage. It is much cheaper than the steel materials, and it is among
esses of material that have not greatly increased in price.

Esch: Your views run counter to the repeated declarations of the Inter-
commerce Commission, do they not?

Shaughnessy: I am not in accord with them on that, because the operat-
ults do not show the things that were hoped to be accomplished by steel
ent.

Esch: In their recommendations they say that the use of steel cars in
er-train service be required, and that the use in passenger trains of
cars between, or in front of steel cars, be prohibited.

Shaughnessy: Yes; that is true.

Esch: I think that the reports of the Chief of the Division of Safety
nces in the Interstate Commerce Commission, Mr. Belknap, all seem to
one way, of the increased safety to the traveling public resulting from
of steel cars.

Shaughnessy: Yes.

Esch: I appreciate what you say, that the use of steel cars adds greatly
dead-weight tonnage of the train, necessitating heavier locomotives, and,
se, heavier rights of way.

Shaughnessy: Yes, sir.

Esch: But the public will insist on the continuance, in my opinion, of
el-car equipment.

Shaughnessy: Perhaps they feel safer in it. I think there are equally
asons, Mr. Esch, and better results to be obtained by a wise and reason-
e of both steel and wood in reducing the present excessive dead weight.
, I am very sure it will be found after all equipment is converted to
that we have been hauling around a lot of dead weight, aggregating 10
r passenger in our passenger equipment, and we will later on go back to
much lighter standard of car than that. *The increased safety factor*
are all striving for at the present time will be obtained through other
s, will be obtained through the use of automatic train-stops, which will
to preventing the collision rather than building battleship equipment to
nd the shock when the collision occurs. Automatic train-stops will pre-
e collisions and loss of life, and their adoption, which should be required

forthwith, will insure the maximum of safety and the economical use of equipment.

Mr. Esch: The Commission has recommended the use of automatic stops, there are train-control devices, and our committee in the House has recommended such a bill to the House in a former session.

Mr. Shaughnessy: Yes, sir.

Mr. Sims: I forgot one question I want to ask about the steel car. Should not the passengers who ride in a steel car, on account of its supposed insurance feature, its greater protection, greater safety, why should they not pay for just the same as insurance comes in any other way? Why not keep the steel car and let those whose lives and limbs are saved by it pay for it like they would for any other sort of insurance?

Mr. Shaughnessy: That is one way; that leads to the question of classification of passenger traffic.

Mr. Sims: Increase the rates wherever the expense of the service is increased.

Senator Cummins: Do you know any practical way in which you could get a passenger to ride on a steel car or a wooden car?

Mr. Sims: If you are going to carry both on the same train?

Senator Cummins: It would be worse than to have the entire train wood put the steel cars in the same train.

Mr. Sims: They have whole trains of steel coaches.

Mr. Esch: That would double the equipment and increase the cost.

Mr. Shaughnessy: The question comes back to preventing the collisions. Unless this is done, frightful losses of life will continue because of collisions between through all-steel-car trains and local wooden-car trains. The only way of the Interstate Commerce Commission excluding the wooden car from steel-car trains affords protection to those trains, but none at all to the local wooden-car train, both of which are operated over the same tracks. Railroad officials, engineers, and trainmen are the most exacting disciplinarians and the closest observers of rules and regulations to be found in any line of industry, but of course they are not infallible. Surprise tests made against train-engine-men show a 100-per-cent observance of danger signals over long periods, but the time comes when, through human fallibility of one kind or another, there is a nonobservance and there is a collision and scores of lives are snuffed out. No time should be lost in passing and enforcing an "automatic train-stop" law. Its adoption will supplement our present highly trained and efficient operating forces and afford the maximum of safety from collisions, and at the same time paying for itself many times over in the saving effected of loss of life and property.

WASHINGTON, D. C., June 24, 1911

MILLER TRAIN CONTROL Co., Danville, Ill.

GENTLEMEN: I enclose herewith copy of correspondence, which is explanatory. By way of explanation, I wish to say that I am a member of the Nevada Railroad Commission and have for several years been interested in the adoption of automatic train-stops as the highest form of safety factor against collisions.

Will you kindly let me have the benefit of such suggestions, criticisms, amplification of the statements which I have made before the Newlands Committee and to Director-General McAdoo in behalf of the universal adoption of these devices, stating specifically if the automatic stops can be applied and operated in conjunction with the present electrical track-circuited block signals now in use on many trunk-line railroads, and what will be the cost of a supplemental installation of the train-stops to the electrical-controlled block signals? Further, whether the train-stops can be applied and successfully operated at manual-controlled block signal stations? And, finally, will you give me a résumé of the results which have accrued during the C. & E. I. Railroad's experience in operating under the protection of your automatic train-control, stating specifically, if you can, whether accidents caused by the running of trains over signals "at danger" have been avoided by the use of your device and under what circumstances? Have you record of failures of your control to operate and what can be done to provide perfect safety factor?

Thanking you in advance for this information, I am

Very truly yours,

J. F. SHAUGHNESSY

THE MILLER TRAIN CONTROL CORPORATION.

STAUNTON, VA., July 6, 1918.

MR. J. F. SHAUGHNESSY, *Washington, D. C.*

DEAR SIR: Your favor of the 24th of June, with enclosures, received, and we have given careful consideration both to your testimony before the Newlands Committee and your letter of June 22 to Mr. McAdoo.

It is very good of you to ask our opinion on the subjects in question, and our experience and observation is that your position is logical and sound.

In regard to steel cars, our policy has not been to oppose them, but rather that they should gradually replace wooden cars. However, it has been amply demonstrated that the greatest benefit that can be expected from steel cars in collisions is reduction of casualties. Their use cannot prevent collisions.

Answering your specific questions about our automatic stop working in conjunction with standard automatic and manual signals. The stop was installed and is being operated on the C. & E. I. R. R. in conjunction with their signals and is applicable to any standard system of automatic or manual signals without alterations or complications in any way. The approximate cost of such supplementary installation is \$300 per block.

With reference to your inquiry as to records of failure of the control to operate, we will say that we know of three such instances during the past four years. One was due to imperfect application of shoe on engine and improper adjustment of ramp; two were due to air leaks in pipe connection with shoe and freeze-up at that point. All of these failures were directly caused by lax inspection and improper maintenance, and in each instance the trouble was located at once and corrected.

In regard to your final question: Our stop has been in daily service since November 17, 1914, on the C. & E. I. R. R., on practically all trains—freight and passenger—running over the main line between Chicago and Danville, which, as you are probably aware, is automatic-signal territory, and daily reports are made by the railroad company of the automatic stop similar to those made of the signals. During this time numerous reports have come to us of instances where the stop has prevented trouble more or less serious, and has proven beyond a doubt its dependability as a supplementary safety device by enforcing obedience to signal indications and track conditions. And it accomplishes this without in any way lessening the responsibility of the engineer or interfering with his duties.

As to citing specific instances where the stop prevented accidents or the running by of signals at danger, we think this information should come from the railroad officials.

While the C. & E. I. R. R. Company has been very patient, courteous and helpful to us in developing the automatic stop, yet you fully appreciate the fact that if it were not performing satisfactory service it would hardly have been allowed to remain on the busiest section of their road for nearly four years as part of their equipment.

We wish to thank you for calling our attention to your interest in this subject, and we will be glad to furnish you with any further information that we can, upon request.

Very truly yours,

H. B. MILLER,

*First Vice President and General Manager.***REGULATION OF JITNEY SERVICE**

An important and rapidly growing branch of the States' transportation facilities is represented by the automobile passenger and freight lines. In the matter of the regulation of the rates, service, bonds, etc., these transportation agencies have, since 1917, been as completely under the jurisdiction and control of the Railroad Commission as are the railroads.

Set forth below is the Commission's General Ruling No. 3, which is now being enforced for the protection of bona-fide auto-transportation companies and the public.

GENERAL RULING No. 3

To All Automobile Freight and Passenger Carriers:

Under an order of this Commission dated May 14, 1917, all automobile common carriers were notified to file their freight and passenger tariff schedule on or before June 15, 1917.

In compliance with this order a number of companies, corporations, associations and individuals duly filed freight and passenger schedules. Numerous other operators of automobiles failed to file their schedules either through neglect or because they considered that, under the terms of section 2 of the Railroad Commission Law as amended in 1917, they were not operating as common carriers.

Section 2 of the Railroad Commission Law of Nevada reads, in part, follows:

The term "railroad," whenever used herein, shall mean and embrace any company or individuals or association of individuals owning or operating automobiles, autotrucks, or other self-propelled vehicles, engaged in transporting persons or property for hire over and along the highways of this State as common carriers, and all duties required of and penalties imposed upon any railroad or any other officer or agent thereof shall, in so far as the same are applicable, be required of and imposed upon the owner or operator of said automobiles, autotrucks, or other self-propelled vehicles, transporting persons or property for hire over and along the highways of this State as common carriers; * * * *provided, however*, that automobiles used exclusively as hearses or ambulances operated within the limits of cities and towns, and other automobiles which have no specified routes of travel and which are not operated as common carriers, shall not be construed as being under the jurisdiction of the commission within the meaning hereof.

On May 29, 1917, the Commission issued its General Ruling No. 2, setting forth a resolution passed at a regular meeting held the same date. This resolution reads as follows:

Resolved, That all companies or persons operating automobiles between two or more given points, making one or more trips a week between such points, and who solicit passenger, freight or express business while engaged in that service, shall be considered in regular service and subject to the jurisdiction of the Railroad Commission of Nevada as automobile common carriers.

Resolved further, That all companies or persons operating automobiles as common carriers shall be required to enter into and file a bond with the Commission and shall also be required to file passenger and freight schedules and any other schedules covering the transportation of persons or property which may be required by the Commission, together with such reports as the Commission may demand from time to time.

After giving this matter further consideration, the Commission at a regular meeting held December 14, 1918, withdrew its resolution of May 29, 1917 and ordered the cancellation of General Ruling No. 2, and the following resolutions and orders were adopted in lieu thereof:

Resolved, That all companies, individuals or associations of individuals owning or operating automobiles, autotrucks, or other self-propelled vehicles, engaged in the transportation of persons or property for hire along the highways of this State as common carriers, shall be required to file bonds with the Commission, with good and sufficient sureties, together with tariff schedules, rules and regulations governing the transportation of persons and property.

Resolved further, That the filing of bonds and schedules of rates, rules and regulations, governing the transportation of persons and property shall be required of all companies, individuals or associations of individuals holding themselves out for hire as common carriers whether operating on regular schedule between specified points, or holding themselves, employees or equipment out for hire upon call to transport persons or property between various points in the State of Nevada.

Resolved further, That this ruling shall not apply to companies,

individuals, or associations of individuals operating hearses, ambulances, taxicabs, automobiles or autotrucks which are operated as common carriers within the limits of cities or towns in the State of Nevada.

It Is Therefore Ordered, That all companies, individuals or associations of individuals operating automobiles or autotrucks as common carriers as defined above, shall be required to file their schedules of freight and passenger rates and rules and regulations governing the transportation of persons or property, in the form prescribed by this Commission under its Tariff Ruling Number 6, on or before January 15, 1919.

It Is Further Ordered, That no such companies, individuals or associations of individuals shall thereafter be permitted to engage in business as common carriers until they have first filed their tariff charges and specified the routes over which they will operate, and have secured notice from the Commission that these regulations have been satisfactorily complied with.

It Is Further Ordered, That all companies, individuals or associations of individuals failing to comply with this order shall be considered as violators of the Railroad Commission Law of Nevada, and each case will be referred to the Attorney-General of Nevada for proper action; *provided*, that persons who have already filed tariff schedules, rules and regulations and bonds in compliance with past orders of the Commission may be considered as having complied with this order.

It Is Further Ordered, That as soon after the receipt of tariff schedules as possible, all companies, individuals and associations of individuals who have not already filed bonds, shall be notified as to the amount in which bonds shall be filed and shall be given a reasonable time in which to file the same with the Commission.

It Is Further Ordered, That all companies, individuals, or associations of individuals operating automobile lines as common carriers in the State of Nevada, will be required to submit bonds for the approval of the district attorney of the county in which such bonds are executed before filing same with the Commission.

RAILROAD COMMISSION OF NEVADA.

Dated December 14, 1918.

By E. H. WALKER, *Secretary*.

Set forth below is a comprehensive report by the Railway Review of Chicago, Ill., covering the rapid growth of auto-transportation throughout the country; its importance to the public; a résumé of the steps being taken to meet varying conditions and kinds of service; and an illuminating review of the cost of operation:

MOTOR-TRUCK TRANSPORTATION GROWING RAPIDLY

As Shown by the Railway Review, November 30 and December 7, 1918

Within the past six months a new development has made its appearance in the transportation field. This is the widespread introduction of motor-truck transportation service in inter-city traffic. Rarely seen a few months ago, except in a few localities, the motor freighter today is a common sight on many of the main highways of the country, especially in the East. It is doing much of the work that formerly constituted the short-haul business of the railroads; it is keeping vital merchandise out of congested terminals, supplying factories with the much-needed raw materials and speeding up the output of essential products. It is showing the manufacturer and merchant that there is a way to escape the difficulties and loss resulting from embargoes and transportation tie-ups. Such further advantages as direct store-door or warehouse deliveries without requiring a terminal haul, the development of new sources of material and the reduction of time in transit are other important features.

A few years ago motor-truck highway transportation was vigorously opposed by railroad traffic departments and under the prevailing conditions the business was making but little progress. However, with the competitive features of railroad transportation discarded, at least temporarily, a strong impetus seems

to have been given to the movement to eliminate all forms of competition between steam and electric road, inland waterways and highway transportation. We now see the Director-General of Railroads promoting inland water transportation by building a fleet of river barges and steamers and encouraging the use of canals; we have the statements of officials of the Railroad Administration that that organization is in hearty accord with every effort made to promote the use of motor trucks in facilitating highway transportation, and we have the crowning act of railroad officials diverting traffic from their own roads for shipment via these new transportation lines.

Of course, the underlying motive of this abandonment of what was once considered the prime essential of the business of transportation has been wartime efficiency—the concentrated efforts of all for the winning of the war. However, wartime efficiency is merely a phrase—a catchword. Efficiency is the same either in war or in peace, and, if it is obtained by certain methods and practices under wartime conditions, these methods and practices will be the subject of comment and investigation when conditions are different. The permanent retention will not be a matter of sentiment, just as the return to the old competitive conditions will not be a matter of sentiment, but will depend upon the economic results under a changed régime.

At the present time, highway transportation, or, more particularly, motor truck transportation, is being encouraged by the railroad transportation for the expressed purpose of relieving the rail carriers of some of the burden of short hauls and for the purpose of relieving congested terminals. The railroads need this relief; their development has not kept pace with the development of the country's business, and consequently, in an emergency when demands upon them are more than doubled, they must resort to supplementary means in order to perform properly their functions.

HIGHWAYS TRANSPORT COMMITTEE

The national value of highways in their relation with rail and water transportation and the necessity for their immediate development has led to the appointment of a highway transportation committee by the Council of National Defense. The object of this committee is to increase and render more effective all methods of transportation over highways and in this way strengthen the Nation's transportation system and relieve the railroads of a part of the heavy short-haul freight traffic burden. Competition between any of the particular means of transportation is discouraged by this committee and it aims to encourage the transportation of freight by that method which is the most efficient and economical.

The highways transport committee at Washington deals with the national problems of highways transport. The plans provide for carrying out the policy through state highways transport committees, which are appointed by, and form a part of, the state councils of defense.

By this method of cooperation the details of the campaign are worked out at headquarters and the State is free to take vigorous action looking to the execution of national policies, and is in this manner able to accomplish the greatest results in the shortest possible time.

The state committee consists of a chairman, secretary, and not less than five members, who form the field section. These five members are chosen first dividing the State into five principal divisions and then selecting one member from the principal point in each division. These five men, while being members of the state committee, are in turn chairmen of, and responsible for, the proper organization of their district.

District boundaries follow established county lines, because eventually every county is to have a highways transport committee. In certain sections of the country the feature which tends to distinguish one district from another will be the large distribution centers forming the heart of the several districts. In other sections of the country which include no large cities the district will be determined principally by certain areas, such as agriculture, manufacturing, lumber, minerals, oil, etc., and with regard to present development of transportation facilities.

The idea, however, is to see that the entire State is divided into five districts, each with its proper organization and representation on the state committee, so that the committee as a whole will have exact information of the varying conditions throughout the State.

In the States already highly organized, in addition to the five members of the state committee described above, who also serve as chairmen of the five state districts, an executive section or planning staff is made a part of the membership of the committee. The members of the executive sections have as their function the planning and inauguration of the special features of the work to be undertaken by the committee as a whole: to put into practical field operation such instructions as come from Washington.

Each member of the executive section is expected to devote his thought to one of the principal divisions of our work, such as rural motor express, return-load bureaus, cooperation with Federal Railroad Administration, greater efficiency of highways transportation, etc. The state highways commissioner, or engineer, should be a member of this section, as well as the state agricultural leader who directs the activities of the county agents throughout his State. The executive section is composed of men who can meet very frequently.

The scope of the work of these state committees in general can be divided into five sections.

1. *Return Loads*—The elimination of empty running of vehicles by the bringing together of shipper and truck owners in a systematic way, so as to provide full load where possible.

2. *Rural Express*—By rural motor express is meant the use of the motor truck or horse-drawn vehicle in regular daily service, over a fixed route, with a definite schedule of stops and charges, gathering farm produce, milk, live stock, eggs, etc., and delivering them to the city dealer and on the return trip carrying merchandise, machinery, supplies, etc., for farmers and others along the route. This service amounts to a collection and delivery that comes to the farmer's door with the same regularity that the trolley car passes over its tracks.

3. *Cooperation with the Federal Railroad Administration; Terminal Relief and Store-Door Delivery*—The relieving of congested terminals and cooperating to eliminate short hauls by railroads through effective transport service. Under this heading comes the establishment of store-door deliveries.

4. *Educational*—This educational campaign to place highways transport work in its proper light throughout the State through the medium of chambers of commerce, rotary clubs, mayors, newspapers, magazines, and to enlist the support of all motor-driven vehicle owners.

5. *Transport Operating Efficiency*—Making transportation more effective by encouraging the efficient use of all vehicles, by avoiding the making of trips with only part load, and by eliminating waste time in loading and unloading, and the avoiding of delays in giving and signing of receipts, and so on.

Among other matters which are considered are the proper legislation with regard to the operation of transportation over highways, charters, license fees, etc.; adequate means of financing operations; maintenance of proper contact with state highway departments; cooperation with existing agencies looking toward the establishment of adequate marketing facilities.

EXTENT OF MOTOR-TRUCK TRAFFIC

Inter-city motor-truck transportation service can be divided into four general classes.

First—Delivery service maintained by wholesaler and large corporations, such as the Great Atlantic and Pacific Tea Co., the Standard Oil Co., United Cigar Stores, for the purpose of restocking their customers and branch stores in towns within a radius of one hundred miles of distributing centers.

Second—Intermittent motor-truck service by individuals or companies for special service under contract and the use of trucks by large producers for purposes of marketing.

Third—Motor-truck companies maintaining regular routes, schedules and rates, performing all the functions of a common carrier between cities.

Fourth—The use of motor trucks by the Army between cantonments and near-by cities and the movement of large trains of motor trucks from inland factories to the seaboard under their own power and cargoes with munitions or other freight.

Innumerable instances of the use of motor trucks in relieving rail congestion can be had. In some instances manufacturers had found it impossible to secure as promptly as it was necessary special machinery or the material to enter into their products except by sending their own trucks overland for it, and con-

versely to deliver to other manufacturers the products of their own factories. By this means not only was railroad congestion relieved, but the efficiency of their own business was increased.

The total tonnage moving over highways is increasing at a tremendous rate, in some States as much as 400 per cent increase over last year has been shown. In the Cleveland-Akron area it is reported that 61 per cent as much freight is being moved by motor express as the railroads are carrying. The development of the return-load idea, which insures a more economical operation of highways transport, is being pressed in all sections, particularly in Connecticut, with Hartford acting as the central bureau. In the vicinity of Cincinnati and Omaha live stock is being carried to the stockyards in increasing numbers. Rural express has reached a high point of efficiency in Maryland, New Jersey, eastern Pennsylvania, and southern New York. Arrangements are being made to connect the New York state barge canal ports with farming communities by rural express.

Shoe manufacturers supplying our armies operate fleets of trucks between Boston and near-by shoe centers, carrying hides in one direction and finished shoes in the other. Cotton and woolen mills in New England do not await the arrival of slow incoming freight. They go and get their raw materials. Heavy machinery is delivered direct from shops and foundries in Connecticut to factories in New York. Wholesale grocers deliver in Washington from warehouse in Baltimore. Tons of chemicals are delivered with but one handling after leaving the chemical works.

With the coal problem primarily one of distribution, motor trucks have been performing a service that undoubtedly will be reflected in the character of coal bins for months to come. Not only have the motor trucks relieved the roads by transporting coal over short distances, but have gone so far in some districts to haul coal direct from the mines to consumers. This is especially true in the Pittsburgh district, where hundreds of trucks throughout the summer have been engaged in hauling coal for Pittsburgh concerns direct from the mines to the company's own storehouses or cellars.

It is not an uncommon thing to see dozens of trucks rolling over the south of Pittsburgh loaded with coal secured from small bank mines. The number is steadily increasing, thereby releasing railroad cars for long-distance hauling.

Hauling coal direct from mines by motor truck also was resorted to with much success at Terre Haute, Ind., the last winter when the retail dealers depending on car shipments were unable to secure coal by rail with sufficient frequency to keep their customers supplied. Motor trucks sped back and forth between Terre Haute and the mines which are within seven miles east and west of the city. Retail companies owning their own mines, if not already the owners of trucks, immediately purchased motor vehicles and by this method brought much-needed relief to the city. Hauling by truck was much faster than by rail service, reducing the time of delivery from weeks to days.

Motor-truck transportation of coal from the mines directly to the consumers also has been contracted for by the Birmingham (Ala.) Civic Association, working in conjunction with the County Board of Revenue and the Board of Commissioners. The contract was closed recently with the Jenkins Motor Company, and the company has agreed to establish two motor-truck lines, to move 200 tons of coal daily. This is reported to be the most extensive utilization of motor-truck transportation, for the hauling of coal from the mines to the consumer, in the United States. The plant contemplates the establishment of a municipal coalyard to supply domestic trade, and the construction of miles of public highway, and two additional miles, connecting the mines with the main highway. Two fleets of trucks will be operated by the contractor; these are expected to add not less than 50,000 tons to the city's winter supply.

Careful research has revealed that 900,000 tons of war material and other important merchandise is being hauled yearly between Philadelphia and New York by motor trucks. During a single week in July, 1918, motor trucks carried a total of 3,175 tons of freight over an Ohio road 40 miles long between Cleveland and Akron, while three railroads running between these two towns reported a total carriage of 4,970 tons, which is almost an even break between the two systems of transportation. This is not an isolated case as the comparison undoubtedly has many parallels which could be cited if figures were available.

This service is equivalent to that which could be performed by the use of no less than 885 railroad cars each week. A significant fact brought to light in the survey of freight conditions existing between Cleveland and Akron was that during a nine-months period the highway tonnage from Cleveland to Akron was 65 per cent of the rail tonnage and that the freight transported over the Cleveland-Akron highway during the same period increased 140 per cent over a like period of time.

Some railroads have had to decree that goods consigned in less than carload lots cannot be delivered in any specified time. This ruling has resulted in increased tonnage hauled by motor trucks.

The facilities of express companies for general work have been very much limited through the necessity of using baggage and express cars in troop movement. As a consequence the purveyor of food supplies has found himself hard pressed to get transportation and he is placing increased dependence on the motor truck.

The forming of many heavy haulage companies operating trucks between big cities and sometimes covering as much as 150 miles on their regular routes is a significant development. The use of trucks in this kind of work presents advantages over the railroads since the truck picks up freight at the loading platform of the shipper and delivers direct to the door of the consignee, at a saving of time and labor.

The great possibilities of long-distance motor haulage are seen in the operation of the Akron to Boston Express by the Goodyear Tire and Rubber Company. A year and a half ago the Goodyear Company for a period of several days was unable to ship goods from its Akron plant by rail due to inability to secure empty box cars, and, largely as an experiment to test the feasibility of giant pneumatic tires and in an endeavor to deliver finished merchandise to the East, placed in operation a truck train to the Atlantic coast. After being in service since April 19, 1917, the truck train is proving so advantageous as compared with rail shipments that the company is now considering the putting into service of a large fleet of trucks to deliver the major portion of its goods to the various branches east of the Mississippi. It took the first seventeen days to cover the 740 miles between Akron and Boston, but today the same truck and others are making the same run in three and one-half days.

It is interesting to note the work of these trucks from the viewpoint of the Goodyear Company:

"To the uninitiated," says an official of that company, "it is startling to know that we have made these round trips—winter and summer—in an average of less than eight days. During the severest blizzards in January, with the thermometer down to 20 degrees below zero, these trucks were plying via the Lincoln Highway over the Pennsylvania mountains transporting war materials for the Government. Such experiences as these convince us that the motor truck offers immediate and practical relief to the present (winter of 1918) railway transportation congestion. If Goodyear can transport product over a 750-mile route in the dead of winter and make deliveries by truck when delivery by rail was impossible, surely motor trucks are infinitely more practical for hauls of 25, 50 and 100 miles. When we ship from Akron to Boston in three and one-half days, we are doing a great deal better than we have been able to do by railway express even in normal times.

"In pioneering long-distance highway transportation, naturally our first thought was to develop a wider market for our tires, both pneumatic and solid, by demonstrating the usefulness of trucks in competition with railway transport. But our experiences have demonstrated the vast usefulness of truck transportation in moving our product where railway transport is unavailable. When we started our truck fleet in April, 1917, the railway transportation problem was not so acute. Since then, however, our highway transport express frequently has been our sole relief from acute transportation problems. Time and again, railway embargoes have prevented shipments from Akron to the East when materials from our Akron plant were badly needed for war or commercial uses. In such predicaments our trucks have done valiant service.

"Incidentally, we have found that pneumatic tires materially increase the usefulness of the truck in such service.

"The wider use of motor trucks in the solution of present-day problems is of momentous import."

During September the Goodyear Tire and Rubber Company sent two of the

trucks used on the Akron-Boston run from Boston to San Francisco. The trucks covered the 3,717 miles in 20.37 days. From Boston to Akron they carried cotton fabric and from Akron each truck transported 18,000 pounds of airplane tires to the Pacific Coast. They averaged 15 miles an hour the greater part of the way. These two trucks like all units on the Akron-Boston run are equipped with a sleeping compartment back of the driver's seat. The drivers work in shifts and the trucks are kept on the move night and day, one man sleeping while the other drives. These trucks now on the return trip are hauling a load of baled cotton from the Goodyear cotton plantation in Arizona to a Goodyear fabric mill in Connecticut.

The history of the Beam-Fletcher Corporation of Philadelphia, which was first to start a daily motor-truck freight line between Philadelphia and New York, and the rapid growth that has attended this company's business, is interesting.

On January 1, 1917, this company started business with a capital of \$250,000 and a fleet of eight 5-ton White trucks. By July 1 this fleet had been increased to twenty-two and by December 1 to thirty-two of the same kind and capacity. At present fifty-seven trucks are operated. A number of full loads of merchandise were hauled from Philadelphia to New York during the early part of the year, and on August 1, a daily motor-truck service was inaugurated between New York and Philadelphia.

A small storeroom was rented at 182 Washington Street, New York, on September 1, to be used as a receiving station, and on November 1 the company leased the six-story building, which it now occupies at the corner of Dey and Washington Streets. The business has increased by leaps and bounds, while the gross income during 1917 was in the neighborhood of \$300,000, and the company feels confident that it will run far above the one-half million mark in 1918.

At the present time this concern is operating almost its entire fleet in the distance hauling between New York, Philadelphia, Baltimore, Reading, East Allentown, Bethlehem, Millville, and Vineland, N. J., and from ten to twenty 5-ton trucks make the trip every night in the week between New York and Philadelphia, depending entirely on the requirements of their shippers.

It will be seen, therefore, that this company is moving from 100,000 to 200,000 pounds of freight daily between New York and Philadelphia, and approximately the same amount between its various other terminals. These figures compared to express-car tonnage show that they are daily moving the equivalent to a train of express cars consisting of from ten to twenty cars. About one-third of its business has been rush shipments for the Government, including parts of aeroplanes, munitions, motors, machinery, heavy castings, yarn, cloth for uniforms, and the like. The balance has been miscellaneous freight of all kinds for a great many customers.

Recently the company received an order from the Curtis Publishing Company to move 80,000 pounds of magazines from the Clyde Line Dock, Philadelphia, on account of an embargo placed that day, to New York. The order was placed about 2:30 p. m. and at 6 p. m. the last truck was on its way to New York. A few weeks ago they hauled 400,000 pounds of leather to New York for export shipment. At various other times they hauled from 100,000 pounds and upwards of sugar, phonograph records and various other commodities which could not be shipped by rail or water, on account of embargoes. The rates are practically the same as express rates, and in some cases less than express rates.

The encouragement which the Government has given to the establishment of rural motor-express routes, has prompted this company to do its utmost to extend its service further. In consequence of which several new routes have been placed in operation.

The section traversed by the Beam-Fletcher trucks through the New Jersey towns is known as one of the greatest egg-producing areas in the country. Eggs are expected to be the biggest single item of farm produce hauled. A special type of body for hauling eggs is being used by this company. A feature of its construction is that nothing projects on the inside of the body to damage the eggs or crates in any way.

In some cases the trucks will be sent straight through from the Jersey point to New York, and goods delivered the same night, whereas such produce as

brought to Philadelphia will be transferred to a through truck for New York and delivered in New York the next morning.

This corporation also has decided to inaugurate a collection and delivery service in the Kensington mill district and in up-town New York, thus extending facilities to the textiles industry of this city heretofore not at its service. Shipments will be accepted in less-than-truck-load lots. Trucks will swing out from the main station in Philadelphia in the morning on delivery, picking up shipments for New York in the afternoon. These shipments will be carried to New York during the night and be delivered the following morning.

The Beam-Fletcher Corporation has also undertaken on a big scale the long-distance hauling of freight by truck between Washington and New York. It uses sixty 5-ton White trucks on this run and the business now handled by the company indicates the venture will prove as profitable as their earlier operations between New York and Philadelphia. At Washington the Beam-Fletcher company connects with the Maryland Fast Freight Company, which operates between Baltimore and the capital.

Many of the largest merchants of Washington and the Navy Yard contractors are using the new service extensively. All kinds of freight are carried, large and small, and are delivered direct to the consignee, thereby effecting a saving in time over railroad shipments. Points served by the new overland motor freight route include Washington, Baltimore, Philadelphia, New York, Easton, Allentown, and Bethlehem in Pennsylvania, and Alexandria, Va. The complete trip from Washington to New York is made in thirty-eight hours, while the time from Baltimore to Philadelphia is twelve hours.

Another instance of the success of motor-truck transportation is that of the Blackstone Transit Company, operating a fleet of thirty White trucks within a radius of 175 miles of Casper, Wyo. It would be impossible to supplant this service with any equipment other than motor trucks. The extensive wool and oil industries of this section place a dependence in this service which in a large measure makes their successful development possible. The Blackstone Company hauls practically all of the great quantities of supplies from the base at Casper, needed in the numerous oil fields of Wyoming, covering such distant points as Salt Creek, Big Muddy, Teapot, Lost Soldier, Riverton, and other oil-producing centers. On the return trips the trucks embody the return-load feature, hauling wool, the only agricultural product of the Wyoming oil section, from the shearing pens to the railroad station. Trips as far distant from Casper as 150 and 175 miles are frequently made. The hauling facilities of the Blackstone Transit Company have come to be such an integral part of the oil and wool business in recent years that the service is now regarded as indispensable.

A real innovation of motor-truck transportation is the motor-truck refrigerator operated in inter-city service by the Sullivan Packing Company of Detroit, Mich. It is, so far as known, the first truck in the country to be used for this purpose. When this company depended upon railroad delivery, two and one-half days were required to make a carload shipment from the Detroit plant to the branch in Toledo. This loss in time involved shrinkage in meats. The truck, with a heavily loaded trailer in tow, completes the trip in six hours, carrying an average of 18,000 pounds of meat. The body of this truck is designed and built very much like the ordinary refrigerator freight car. The walls and heavy side doors are made of aluminum, cork and wood, an excellent nonconducting combination. Top filling tanks for ice and brine are loaded from the outside. The owners of this refrigerator have found it so satisfactory and economical that an extensive expansion is contemplated on highways within a radius of one hundred miles of Detroit.

That the haulage of fragile commodities by motor truck is feasible has been demonstrated by the bureau of markets of the United States Department of Agriculture. The White Motor Company designed a truck body especially for the hauling of eggs. This truck left Vineland, N. J., at 11 a. m., and arrived in the wholesale district of New York City at 2 o'clock the next morning, traveling the entire distance of 140 miles without breaking a single egg. Delivery from the shipper to the wholesaler was made in fifteen hours, which is faster time than that made by express shipments. The five-ton truck carried 150 cases of eggs, weighing nearly four tons, and the balance of the load was made

up of plate glass. One full truck-load of 210 cases of eggs is now being hauled daily between Vineland and adjacent territory to New York.

Another use of motor trucks which is of distinct advantage to the railroad under any conditions, competitive or otherwise, is their employment on remote stage lines and in other sections where railroad construction has not yet been undertaken. In many sections of the West the trucks have supplanted the stage-coaches, the horse-drawn vehicles being unable to compete with the trucks because of the lower cost of operation and the more efficient service obtained. In this capacity the trucks act as feeders to the railroads and perform all the functions of branch lines.

COST AND CHARGES OF MOTOR-TRUCK SERVICE

As Shown by the Railway Review, December 7, 1918

Many see in the rapid development of motor-truck traffic during the past few months only the logical evolution of the transportation industry. They are aware that waterways are limited by natural laws, and railroads by economic conditions, transportation. These two must be supplemented by an additional method of transportation and this supplementary means is the motor truck, which represents really a reversion to the original methods under improved conditions and modern appliances.

There are many factors entering into the cost of motor-truck service—type of truck, condition of the road, grades, character of the load and density of traffic.

The type of truck best suited for motor transportation is largely a matter of the personal judgment of the operator. It is usually decided by the plausibility of the arguments of the truck manufacturer. All trucks may be said to be good, and while some perform their functions better under certain conditions than others, their general utility must be determined by local conditions and no general rule can be applied.

Perhaps the principal factor in determining the cost of motor-truck transportation is the condition of the roads. Tractive tests conducted at various times during the past three years seem to indicate that concrete is the best type of road for motor-truck transportation. The saving effected on a concrete road lies in the utilization of power, the elimination of fuel waste, and in the upkeep of the truck.

The tests conducted by the good-roads bureau of the California State Automobile Association on various types of roads showed the following results:

PULL IN POUNDS PER TON

Over a level, unsurfaced concrete road.....	27.6
Concrete base, 8-inch skin top asphaltic oil and screenings.....	49.2
Waterbound macadam, level, good condition.....	64.3
Concrete base, 12-inch Topeka top, level, good condition.....	68.5
Gravel road, good condition, level.....	78.2
Earth road, fine dust, level.....	92
Earth road, stiff mud on top, firm underneath, level.....	218
Loose gravel, not packed down, new road, level.....	263

The following table of road resistance of rubber-tired trucks and trailers was obtained by the Troy Wagon Works. It is the result of various performances of different makes of motor trucks of various capacities handling trailers manufactured by this concern:

Type of road	Road resistance in pounds per ton
Asphalt.....	20
Smooth brick.....	25 to 35
Poor brick, ordinary (cobble or macadam).....	35 to 60
Hard dry clay road or hard gravel road.....	50
Soft macadam.....	75
Ordinary country clay road.....	100
Ordinary country sand road.....	150
Sand, 8 inches deep.....	275 to 300

The following table of tractive resistance over various kinds of pavements shows the comparative results in pounds per ton obtained by the good-roads bureau of the California State Automobile Association, the United States Department of Agriculture, the Missouri Department of Agriculture, and the Packard Motor Car Company:

TABLE OF TRACTIVE RESISTANCE

<i>Kind and Condition of Pavement</i>	<i>California State Auto Association</i>	<i>U. S. Depart- ment of Agriculture</i>	<i>Missouri Depart- ment of Agriculture</i>	<i>Packard Motor Car Company</i>
Loose gravel.....	263	320	.....	.....
Average gravel.....	.....	80	.....	.....
Packed gravel.....	78	.....	.....	82
Average value.....	170	200	.....	.....
Earth road, mud on top.....	218	.....	261	.....
Average condition.....	.....	.....	.....	99
Earth road, dust on top.....	99	.....	90	.....
Average value.....	169	.....	170	.....
Unsurfaced concrete.....	27.6	.....	.....	80

The advantages of good roads are only too evident and this fact has long been recognized. Over twenty million square yards of concrete roads, including streets and alleys, have been laid yearly for the past three years. Of this amount twelve million square yards were laid in country highways, which is a strong indication of a nation-wide desire for better roads. When the advantages of motor-truck traffic are brought home to shippers and rural communities, it can safely be predicted that a greater increase in the construction of concrete and other permanent types of roadway will result. At the present time there are approximately one hundred and seven million square yards of concrete pavements in this country. If this were placed in one strip eighteen feet wide, it would mean 10,000 miles of concrete road, or enough to cross the continent three times.

The nature of the country traversed and the percentage of grade encountered is also a determining factor in motor-truck transportation costs. However, the cost is not excessive even in mountainous sections and motors have been able to operate where either from economic or natural causes a railroad could not be built. Moreover, the automobile and the truck are rapidly supplanting the horse-drawn stage coach in those parts of the country where this mode of transportation still persists. A typical instance of this is shown by the operation of the Redding-Weaverville Stage Company, between Redding and Weaverville, Cal. These two county seats are fifty-two miles apart and the only roads connecting them are mere mountain trails and narrow roads where mountain wagons were the only vehicles to pass. The grades are as high as 30 per cent. This stage company conceived the idea of substituting motor trucks for the old freighting wagon. The idea was ridiculed but nevertheless two 2-ton trucks were purchased. These have been so successful that they have gradually eliminated the competition of all horse-drawn vehicles on the route. This motor truck line also has a contract for carrying the mail and parcel-post between the two towns and is the only means of getting freight and mail into Trinity county. Formerly it took an eight-horse team seven days to make the round trip from Redding to Weaverville, hauling five tons one way. The cost of such a trip was \$98 for moving the five tons a distance of fifty-two miles. With the trucks the round trip is made in twenty-two hours at a cost of approximately only \$25. These figures give a fair idea of why the motor truck is rapidly becoming the chief transportation agency in such localities.

The character of the load is another element that determines the cost.

A high-grade truck is built with ample power to take it over the worst roads ordinarily encountered, and the steepest grades. For instance, the motor of a truck must exert ten times the force to propel it over a sandy road that it does to propel it over asphalt. It is evident that a truck designed to operate satisfactorily over the sandy road will have an immense amount of excess power when used only on the asphalt. When used, therefore, over ordinary hard-surfaced roads and moderate grades, it still utilizes but a part of its power. This excess of power (draw-bar pull) which every standard truck develops in addition to its rated carrying capacity, may be utilized and made profitable by the addition of a trailer. Otherwise, it represents waste.

Roughly speaking, the average motor truck, when loaded, develops a draw-bar pull in pounds of one-half of its rated capacity. For example, a 3-ton truck will develop 3,000 pounds draw-bar pull. The draw-bar pull required to draw a ton of material varies from 50 pounds on a brick street to 150 pounds on a hard country road. An average of 250 pounds draw-bar pull will haul a ton of pay load on a trailer. A 3-ton truck, therefore, will carry its 3-ton load

and still have sufficient reserve power to haul from twelve to fifteen tons behind it.

It may safely be stated that, under ordinary road conditions, the average truck has plenty of reserve power or draw-bar pull to enable it to handle a trailer of equal carrying capacity. The load is doubled, at the least, with a comparatively slight addition to the operating expense. This additional expense will run from ten to twenty per cent. To illustrate the profit in truck-trailer operation, as compared with truck alone, if a truck is earning \$24 a day, with an operating expense of \$14 a day, thus making a profit of \$10 a day, for about \$2 a day additional to cover trailer operating expense, the truck would, with trailer attached, carry double the load, and the profit would be \$18 instead of \$10, an increase of 80 per cent.

Truck costs are of two kinds, fixed and variable. The fixed charges are those which must be paid regardless of whether or not the truck performs any service, and variable are those which depend on the work which the truck does. The average cost of operation of a standard motor truck is 20 cents per mile. This figure covers both fixed and variable charges based on 25 per cent depreciation per year and is the one generally used by engineers and sales efforts as a basis of haulage costs. Thus, a 5-ton truck hauling five tons of pay-load a distance of one mile reduces the cost of one ton to 4 cents per mile, or 4 cents per ton-mile. If there is no return load the cost is doubled and should be quoted at 8 cents per ton mile. However, many regard 20 cents per mile as too low and believe the figure should be nearer 26 cents.

This illustration serves to indicate the value of trailers as well as the "return-load" idea. With the use of the trailer and the semitrailer, two and three times the load of the truck alone can be hauled. By making allowance for the increased expense of operation, although this is practically negligible, the cost per ton-mile will be considerably reduced.

The following table compiled by a leading truck and trailer manufacturer gives a fair idea of the operating cost of a 5-ton truck and a 5-ton trailer.

TRUCK		Per day
First cost of truck, \$4,575 (Life 5 years working 300 days per year, 1,500 days).....		\$3.04
Gasoline—10 gal. per day at 25c.....		2.50
Oil—1½ quarts at 65c per gal.....		.36
Tire cost, based on manufacturers' prices to the consumer. Pressed-on tires, 6-inch front and 6-inch dual rear, \$330.80. Assuming truck will run 50 miles a day and figuring on the basis of the 7,000-mile tire guarantee of manufacturers, this gives .047 a mile, or for the 50 miles.....		2.363
Repairs at \$400 per year.....		1.33
Driver's salary.....		4.50
Insurance, fire, at \$1.50 per \$100 on value of \$4,575 per year, \$68.75.....		2.29
Insurance, liability and property damage. This runs from \$50 to \$125 a year for a limit of \$5,000 liability and \$1,000 property damage. We have figured on the basis of \$94 a year, or.....		.314
Hard grease—cups and wheels, at \$6 per year.....		.62
Interest on investment at 6%.....		.913
License fee, \$5 per year.....		.016
Total operating expense of truck.....		\$15.48

TRAILER		Per day
First cost of trailer, 7-inch solid rubber tires, \$1,670. (Life 5 years, working 300 days a year, 1,500 days).....		\$1.112
Tire cost, based on manufacturers' prices to the consumer, 7-inch pressed-on tires, \$243.96. Assuming trailer will run 50 miles a day, and figuring on the basis of the 7,000-mile guarantee of manufacturers, this gives \$0.0348 a mile, or for 50 miles.....		1.74
Repairs at \$50 per year.....		.167
Insurance, fire.....		.069
Insurance, liability and property damage. Trailer rate is 25% of truck rate. Therefore, the rate for a year would be \$25, or.....		.803
Grease.....		.091
Interest on investment at 6% per year.....		.334
License fee estimated \$5 per year (not required in some places).....		.016
Increase of gasoline consumption and tire wear on truck, estimated at 10%.....		.605
Total operating expense of trailer.....		\$4.01

same manufacturer has arrived at the following cost of other capacity and trailers as follows:

3-ton truck, per day.....	\$13.064
3-ton trailer, per day.....	2.659
2-ton truck, per day.....	11.295
1-ton truck, per day.....	9.485
1½-ton trailer, per day.....	1.888
2-ton truck without trailer, per ton-mile.....	2.002
2-ton truck with 6-ton semitrailer, per ton-mile.....	.0808

le these calculations will not be found to meet any particular case they accurate as is possible to make them where charges of different kinds with different localities. By the use of trailers it also has been found ble to run the trucks empty. For instance, when the running time of a is small in comparison with the loading and unloading time, it is more ical to use the truck in the same way as a locomotive is used, that is, for hauling the trailers. By this means it is never idle waiting for as one trailer is being loaded or unloaded while the other trailer is g the trip with the truck.

rating costs of motor trucks are doubled if no return load is provided, is for this reason that practically every chamber of commerce in the

State is beginning to formulate plans for a local motor-truck return-ureau. The benefits to the country at large because of the establishment cal centralized clearing-house for haulage is obvious. It has been esti- that the mileage of empty motor trucks in the United States in one year ts to from 150,000 to 500,000 miles, and every mile that an unloaded runs costs the owner an average of 30 cents. If every truck were ed on the full-load basis in both directions, the gain in goods hauled be at least one-third of those which are transported at the present The necessity of return load operation has been demonstrated, perhaps, reater extent in the East than elsewhere, owing to the fact that many es are located in adjacent cities and there is a continual movement of between them in both directions.

New York State Railways employ a number of motor trucks for over- line work and for delivery purposes. It also uses several automobiles. l cost records of the truck and car service are kept by the company and ical operation is secured by thorough analysis of the detailed cost data btained. To facilitate analysis the several costs, together with the car e for each truck, are tabulated each month for the month and for the ending with that month. The following figures, abstracted from an y C. L. Cadle, chief engineer, Rochester Lines, New York State Rail- in the Electric Railway Journal, show the average operating costs for rucks for the year ended December 31, 1917:

AVERAGE OPERATING COSTS FOR FOUR WHITE TRUCKS

car mileage.....	6,266 miles
most gasoline, per car-mile.....	9.8c
most oil, per car-mile.....	0.8c
most tires, per car-mile.....	12.5c
most repairs, per car-mile.....	8.4c
eneral expenses, per car-mile.....	2.8c
total, per car-mile.....	34.3c

high tire cost for trucks is stated to be due to the fact that vehicles quipped with pneumatic tires when originally purchased.

THE RENO-GARDNERVILLE LINE

following record of the Gardnerville Freight Line engaged in hauling t from Gardnerville to Reno, Nevada, in 2-ton trucks, is illustrative of ts and profits of similar lines.

ays in service.....	7
rips.....	7
eliveries.....	51
oad in pounds.....	40,450
iles traveled.....	728
allons of gasoline.....	128
ints of cylinder oil.....	21
ounds of grease.....	2
total time in hours and minutes.....	46-10

DAILY AVERAGES

Trips.....	1
Deliveries.....	7
Load in pounds.....	5,778
Load per trip.....	5,778
Ton-miles.....	149.76
Average total time.....	6-35
Miles traveled.....	104
Trip distance.....	104
Miles per gallon of gasoline.....	5.77
Miles per pint of cylinder oil.....	34.66

AVERAGE DAILY COST

Including interest on investment, insurance, taxes, rent, driver's wages, gasoline, oil supplies, allowance for maintenance and repairs, depreciation and tires.

Cost per day.....	\$13.37
Cost per mile.....	.12
Cost per ton.....	4.64
Cost per ton-mile.....	.08
Freight charges at \$8 per ton.....	161.84
Entire cost for week.....	93.59
Net proceeds for week.....	\$68.25
Net gain per ton.....	3.36

RATES

The question of rates charged by motor truck express companies is only in its preliminary stage. There seems to be no fixed method of assessing charges. The rates of the Glazer Motor Express Company of Chattanooga, Tenn., based on a fixed charge per 100 hundredweight per mile applying to the classes of freight. Merchandise shipments are accepted at a rate of 1 cent per mile per 100 hundredweight, with a minimum charge of 20 cents; live stock, household goods and similar bulky articles at a rate of 1½ cents per 100 hundredweight per mile; milling products at a rate slightly less than merchandise.

The Beam-Fletcher Corporation, operating between New York and Philadelphia and adjacent cities, have a minimum charge per shipment between certain localities; for instance, \$1 between Philadelphia and New York, Baltimore, Reading, etc. The weight rate per 100 pounds is assessed on all shipments weighing over 201 pounds per cubic foot; a space rate per cubic foot for all shipments weighing less than 201 pounds per cubic foot, and a special machinery rate. No charges are made for the collection of shipments of 100 pounds or over, or for delivery to consignees located in business sections of the city.

POSSIBILITIES OF MOTOR TRUCK TRAFFIC

The possibility of long-distance motor truck travel was shown by the recent trip of a Maxwell truck from San Francisco to New York, a distance of 3,000 miles over the Lincoln Highway. This trip was made largely as an experiment to demonstrate the ability of the Maxwell motor truck. It carried 2,200 pounds of military supplies destined for France. This was the rated capacity of the truck. The journey was made in 17 days, 8 hours and 20 minutes at an average daily mileage of 197.8. The average speed was 16.54 miles per hour, with a maximum speed of not more than 20 miles. The average miles per gallon of gasoline was 11.7 and the average miles per gallon of oil was 326.54. The trip was made in July of this year, but every kind of weather and road condition was encountered. Another innovation in transportation is the combined motor truck and trolley freight service, which is best illustrated by the Interurban Motor Despatch Company of Chicago. In this case the motor truck company occupies the same relation to the electric roads as the express company does to the steam railroads. The advantages of the service lie in increased speed of delivery and the reduced rates compared with the railroads. The trucks of the motor company call for freight at the point of origin and deliver it to the city of the electric line. Most electric lines entering Chicago do not reach the center of the city but have their terminals near the outskirts. This involves a haul for the motor trucks of from 6 to 13 miles. Daily schedules are maintained for the collection and delivery. Each freight train on the electric line averages six cars—a motor and five trailers, the total capacity of each car being 25 tons. The average rate of speed of the trailer freight train ranges from 20 to 30 miles an hour. The motor express company endeavors to deliver shipments

received in the morning that afternoon and shipments received in the evening the next morning. Delivery is also made at the point of destination by motor trucks. Were similar shipments handled by steam roads in the Chicago district the time of delivery would be from twenty-four hours to four days greater. Between Chicago and Aurora, Ill., a distance of 39 miles, the first-class railroad freight rate per 100 pounds is 26 cents. The rate on the motor express cooperating with the electric line is 28 cents. But the latter makes delivery on an average of from thirty-six hours to four days earlier than the steam lines. With this advantage shippers do not hesitate to pay the slightly increased rate. At the present time the business of this company is handled over a route 180 miles in length. It is planned eventually to extend service into adjacent States wherever interurban trolley lines are operated. This will make the company an interstate carrier, and what jurisdiction the Interstate Commerce Commission will exercise over the proposed extension has not been ascertained. In Chicago the company operates 5-ton trucks which travel an average of from 30 to 50 miles per day at a rate of 15 miles per hour. The cost of operation is estimated at \$16 per day for each unit, which includes fuel, repairs and maintenance. The company also, as inducement to responsible shippers, offers weekly credit accounts.

A recent issue of *System* described how two trucks operating in the Cleveland district saved a freight-car a day. The story is of interest as it shows the details incident to truck operation and indicates the competitive conditions which the railroads will have to meet if this feature of transportation is restored. Following is the story:

Two motor trucks have eliminated a branch establishment, a branch manager, a bookkeeper, a plant foreman, two horse-drawn wagons and two drivers for a provision company in Cleveland—all at a cost barely equal to previous for freight and drayage alone. The motor trucks are also increasing sales through giving prompter service, as well as cutting cost, on business that was formerly handled over the railroads.

To the west of Cleveland, 26 and 30 miles respectively from the company's plant, are the towns of Elyria and Lorain. Along the roads leading to each town are smaller suburban localities not to be overlooked as desirable markets. Originally the provision company had a branch house with cold-storage equipment at Lorain, manned by the force of five employees enumerated.

To supply the needs of this section a freight car was routed each day to Lorain by the way of Elyria, the shipment being made up partly of goods to fill orders and partly for stock. The car arrived at Elyria under normal schedule, on the day after packing. There it was uncoupled and Elyria shipments were removed. On the second day after packing, if all went well, it reached Lorain. There the remaining goods were unloaded, transferred to a wagon, and hauled to the branch house for storage or distribution. Orders could not be delivered to the customer's place of business until at least the third day after the car was packed.

This delay was costly in two ways: Because the provision business is highly sensitive to weather and other conditions, and it is difficult to forecast demand. For these reasons the branch was not infrequently overstocked on individual lines, with the consequent danger of loss through deterioration. Reduced prices as an inducement to move excess stock were not unusual. Also, there was a continual danger of complaints from the customer because the goods were three days on the road to him. From both angles conditions were highly unsatisfactory to the company when they decided to employ motor trucks to develop and handle this desirable suburban and small-town trade.

The present plan presents some graphic and profitable contrast. Of the former force at Lorain only the two salesmen remain. One is stationed there; the other has his headquarters at Elyria. Each covers his town and way-station toward Cleveland during the day, and mails in his order special delivery in time to reach the Cleveland plant in the early evening.

Each order is numbered serially by the salesman in the order that it should be delivered. The truck packer then packs the truck in reverse order, so that the driver need waste no time in locating the next delivery. In other words, the salesman routes the truck among his customers each trip in the order which he, from his familiarity with the locality, knows will save time and mileage. The packer observes his instructions, and the driver has merely to follow these exact directions in covering his route.

The orders received in the early evening are packed in the early morning

hours, and the truck leaves the home plant at six in the morning. A truck operates daily over the route to Lorain, delivering at intermediate points also. The Elyria route is covered every other day by a 3-ton or a 1-ton machine, depending on the bulk of the orders on hand. Goods are not shipped for "stock." If the 14-ton truck makes the trip the 3-ton truck is employed on city hauling. The monthly average mileage of the Lorain truck is in the neighborhood of 1,700 miles.

While the solution of the company's Elyria-Lorain problem, because of abandonment of the branch station, represents the greatest saving through motor trucks, the company operates two other notable routes which are interesting, in one case because of the number of communities served, and in the other because of the greater length of the haul.

On alternate days a truck operates from Cleveland directly east through Wickliffe, Willoughby, West Mentor, and Mentor, to Painesville, 29 miles. On three days a week also a similar service covers a 90-mile route reaching Twinsburg, Hudson, Cuyahoga Falls, Kent, and Ravenna—the last named 39 miles south of Cleveland.

The Painesville route illustrates the difficulty of freight shipments. In this territory the company had the alternative of paying a flat charge of \$5 for a way-station stopover, or of paying freight on the full carload to the far point. In either instance, freight service was necessarily slow.

To summarize briefly the following are the many advantages which the company feels that it derives from motor-truck delivery to towns nearby and to rail service:

1. The trucks operate at a cost no greater than the sum of the freight and drayage charges of the earlier system. The previous overhead expense of the branch station, made up of five salaries, rent, upkeep, supplies and depreciation, is now a total saving of no inconsiderable size, and represents a gain for the company.

2. All goods now reach the customer absolutely fresh, always on the day they leave the plant. Over half of the orders are delivered the day they are placed. These two facts are naturally proving powerful sales agents, immediately apparent in results.

3. The company is practically free from costly delays, their resultant complaints from customers and claims against the railroads for depreciation—wasteful in the time they formerly consumed for the office departments. With motor delivery the whole transaction is personal, from the time the salesman takes the order to the minute that the truck driver, the company's representative, unloads the goods at the customer's place of business. All the many chances for misunderstandings, mistakes and delays which developed under the old system—where both a railroad company and a drayman handled the goods—shipment—are now eliminated.

4. Perhaps the most graphic result of the new policy, however, is that the company's sales charts show that the cost of selling and delivering in the Elyria-Lorain territory has been cut one-half. All the other advantages may therefore be fairly regarded as "velvet."

STATUS OF CASES REFERRED TO IN FORMER REPORTS WHICH WERE STILL PENDING BEFORE THE COMMISSION OR THE COURTS AT THE CLOSE OF THE YEAR 1916.

Case No. 300—First-Class One-Way Passenger Fares Between Points on Southern Pacific Company's Lines in Nevada.

This case, entitled *Railroad Commission of Nevada v. Southern Pacific Company*, the details of which are set forth on pages 38 and 39 of the Commission's seventh annual report, is still pending.

Case No. 304—Charges Assessed Passengers Using Drawing-Rooms and Compartments in Pullman Cars.

This case, entitled *J. G. Crumley v. Southern Pacific Company and the Pullman Company*, referred to on page 41 of the Commission's seventh annual report, and page 32 of the Commission's biennial report for 1915-1916, was dismissed October 14, 1918.

Attorney for complainant had, during the year 1915, requested the Commission to hold this case in abeyance. No action having been taken by complainant since that time, the Commission decided to dismiss the proceeding without prejudice on the date above named.

Case No. 315—Application of Rates on Well-Boring Outfit Moving from San Jose to Fallon.

This case is referred to on page 45 of the Commission's seventh annual report, and on page 33 of the Commission's biennial report for 1915-1916, and is entitled *W. D. Moody v. Southern Pacific Company*.

Owing to the fact that technically under the tariff provision in effect at the time the shipment of well-boring outfit moved correct charges were collected from complainant, it was impossible for the Commission to secure reparation. Considerable correspondence was interchanged regarding a readjustment of the Western Classification. However, it was impossible to settle the matter informally, and up to the present time no formal action has been taken.

Case No. 326—Telephone Rates Between Rhyolite and Nevada-California State Line.

This case, entitled *Keane Wonder Mining Company v. J. R. Lane, et al.*, referred to on pages 35 and 36 of the Commission's biennial report for 1915-1916, was dismissed on October 14, 1918.

The proceeding had been held in abeyance on request of complainant since February 16, 1916, and, it being understood that satisfactory adjustments had been made, the case was dismissed without prejudice.

Case No. 328—Caretakers of Live Stock in Double-Deck Cars.

This case, entitled *Tonopah Goldfield Meat Company v. Las Vegas and Tonopah Railroad Company*, referred to in detail on pages 36 and 37 of the Commission's biennial report for 1915-1916, was dismissed October 14, 1918.

The reason for dismissal was that the matter was not pressed to a formal proceeding by complainant, and it was impossible to adjust the case informally.

Case No. 345—Rates on Mineral Water and Carbonated Beverages, Carson City to Various Points in Nevada.

This proceeding, entitled *Carson Brewing Company v. Virginia and Truckee Railway, Southern Pacific Company, and Tonopah and Gold-*

field Railroad, referred to on page 44 of the Commission's biennial report for 1915-1916, was dismissed October 14, 1918, for the reason that complainant did not request formal action. The partial adjustment which was made by the carriers in 1915 evidently satisfied complainant.

Case No. 350—Alleged Unsatisfactory Telephone Service.

This case, entitled *G. H. Fulstone v. The Bridgeport Telephone Telegraph Company and Reading Brothers*, referred to on page 44 of the Commission's biennial report for 1915-1916, was dismissed October 14, 1918, for the reason that complainant did not press the matter formally. It is understood that better service resulted from informal action taken by the Commission.

Case No. 360—Petition of the Bullfrog Goldfield Railroad.

This case, entitled *Petition of the Bullfrog Goldfield Railroad Company*, referred to on page 49 of the Commission's biennial report for 1915-1916, was decided December 30, 1916, the following order being entered:

ORDERED, That the Bullfrog Goldfield Railroad Company is hereby authorized to discontinue, for the present, its branch-line service between Beatty and Rhyolite.

This is not to be construed as authority for the said company to remove the track between the two points named, but at any time, after the lapse of one year from the date of this order, an application by the petitioning railroad for leave to remove the track between said points will be entertained by the Commission and given due consideration.

Case No. 368—Rates on Lumber and Its Products.

This proceeding, entitled *Verdi Lumber Company v. Southern Pacific Company*, referred to on page 51 of the Commission's biennial report for 1915-1916, is still pending.

Case No. 372—Switching Charges.

This case, entitled *Tonopah and Goldfield Railroad Company v. Vegas and Tonopah Railroad Company*, referred to on page 52 of the Commission's biennial report for 1915-1916, is still being held in abeyance.

The hearing of this case was postponed on request of complainant who has not requested that the case be brought to a formal conclusion.

Case No. 385—Overcharge on Shipment of Quartz Mill.

This case, entitled *Robert McSherry v. Western Pacific Railroad Company*, referred to on pages 54 and 55 of the Commission's biennial report for 1915-1916, was dismissed March 28, 1917.

The Commission was unable to secure an adjustment through informal means and so notified complainant under date of March 28, 1917. As the shipment of the quartz mill was interstate in character the Commission offered to take the matter up with the Interstate Commerce Commission if complainant so requested. As nothing further was heard from complainant, the case was dismissed.

CASES FILED WITH THE RAILROAD COMMISSION OF NEVADA DURING DECEMBER, 1916, AND THE YEAR 1917

Case No. 387—Car Shortage.

This case was taken up by the Commission on its own motion December 11, 1916, as a result of a telegram filed by John Rubke, a fuel dealer.

erson City, Nevada, received by him from the Utah Fuel Company at Lake City, Utah.

During the entire winter of 1916-1917 the Commission carried on a continuous correspondence with railroad officials and others with a view to relieving the serious fuel shortage which existed in Nevada at that time.

As the winter referred to was a particularly severe one, the question was of the greatest importance.

As an example of conditions it was found that on January 28, 1917, the following-named cities and town were short the following number of cars of coal for which orders had been placed either early in the winter or late in the fall of 1916:

Carson, 63 cars; Montello, 2 cars; Wells, 3 cars; Elko, 16 cars; Carlin, 3 cars; Battle Mountain, 12 cars; Winnemucca, 46 cars; Imlay, 3 cars; Hazen, 1 car; Fallon, none; Mina, 3 cars; Sparks, 9 cars; Tecoma, 1 car; Cobre, 1 car; Nenzel, 3 cars; Golconda, 3 cars; Beowawe, 1 car; Hader, 4 cars; Halleck, none; Deeth, 1 car; Wabuska, 3 cars; Tonopah, 6 cars; Schurz, 2 cars; Luning, 2 cars; Virginia City, 5 cars; Pahrump, 9 cars; Minden, 1 car; Yerington, 11 cars; Eureka, 3 cars; Ely district, 20 cars; Austin, 25 cars short, but shortage taken up by Nevada Central Railroad through its storage supply; Tonopah and Goldfield, about 25 cars. The total shortage amounted to approximately 286 cars, or about 14,300 tons of coal.

The above figures on shortage covered coal for domestic consumption only, and did not relate to the shortage of coal for industrial purposes. As an example of industrial conditions, it was found that Nevada Northern Railway and Nevada Consolidated Copper Company, operating in the Ely District, had only five day's supply of coal on hand on January 25, 1917.

The Commission took this matter up with the Interstate Commerce Commission during January, 1917, and through the efforts of all concerned the situation was greatly relieved in February, 1917.

This case was also handled in conjunction with Case No. 395.

No. 388—Reparation Claims on Coal Shipments.

On December 23, 1916, a complaint was received from Cremer Erikson and Co., of Goldfield, Nevada, against the Tonopah and Goldfield Railroad and other railroads delivering coal in the Goldfield district.

The complainant protested against the establishment of a tariff regulation requiring receivers of coal to stand a shrinkage in coal weights amounting to 2 per cent, instead of only 1 per cent, the regulation which had been in effect for several years past. It was contended that the natural shrinkage of coal in transit from the mines in Utah and shipping to Goldfield was not in excess of 1 per cent, and that any shrinkage in excess of 1 per cent was unreasonable and excessive.

This case was taken up informally with the traffic officials of the Tonopah and Goldfield Railroad and the Las Vegas and Tonopah Rail-

road. The Las Vegas and Tonopah Railroad Company advised that it had not made any deductions on account of shrinkage of coal in transit, but the Tonopah and Goldfield Railroad Company stated that the 2 per cent shrinkage deduction had to be made in compliance with the regulations then in effect.

The complainant was furnished with copies of the letters from both

companies, and as the Commission was not requested to take further action the case was dismissed.

Later this same question was taken up under Case No. 440.

Case No. 389—Interchange Tracks Between Lines of Southern Pacific Company and Western Pacific Railroad.

This proceeding was taken up by the Commission on its own motion January 24, 1917. The Southern Pacific Company and Western Pacific Railroad Company were requested to establish and maintain interchange tracks at points in Nevada, such as Elko, Carlin, and Winnemucca.

Under date of February 21, 1917, the Commission was advised that the roads concerned could find no immediate reason for establishing interchange tracks at the points named, but agreed to give the matter further consideration.

As no formal complaints had been received by the Commission concerning this question, the case was held in abeyance.

Soon after the United States Railroad Administration took over the operation of the Southern Pacific Company and Western Pacific Railroad Company, such information as the Commission had on this subject was laid before the administration and an investigation was requested.

As a result of the various investigations and actions of the Commission relative to this subject, a letter was received from W. R. Scott, Federal Manager of the United States Railroad Administration for the Southern Pacific Company and Western Pacific Railroad, under date of October 5, 1918, advising that action had been taken looking toward establishment of certain interchange tracks at points in Nevada.

Under the adjustment the Southern Pacific tracks would be used for all west-bound traffic and the Western Pacific tracks for all east-bound traffic between Winnemucca and Wells, Nevada. Suitable cross-overs and connections between the tracks of the Southern Pacific and Western Pacific lines were being established at Winnemucca and Alamo. Connections for terminal handling had already been installed at Elko and Carlin. It was understood that the paired operation of the two lines would be commenced November 1, 1918.

Case No. 390—Telephone Rates at Moapa.

On January 18, 1917, a petition was received from the Moapa Valley Telephone Company asking the Commission to grant authority to the company to increase its local telephone rates.

Under date of January 20, 1917, the Commission advised the company to file its increased rate schedules, making them effective on thirty days' notice, when such schedule would be subject to suspension pending hearing and investigation, provided the Commission deemed it in the public interest to make such suspension.

The petition was therefore dismissed.

Case No. 391—Telephone Service Requested.

On January 28, 1917, a complaint was received from Antone Schaefer against the United Farmers Telephone and Telegraph Company asking that the defendant company be required to render telephone service at complainant's ranch, a short distance south of Carson City, Nevada.

This question was taken up with the defendant company and the Nevada Consolidated Telephone and Telegraph Company with a view

to securing an adjustment informally. It appeared that the United Farmers Telephone and Telegraph Company operated a toll line only, such line extending to the city limits of Carson City, while the Nevada Consolidated Telephone and Telegraph Company rendered local telephone service only in Carson City and to Stewart, Nevada, where the Government Indian School is located. Complainant desired service through the Carson City local exchange of the Nevada Consolidated Company.

It was found that neither company would agree to furnish the service desired by complainant, and as no formal action was requested, the case was dismissed.

Case No. 392—Lighting of Virginia and Truckee Railway Passenger Coaches.

On January 27, 1917, the Commission on its own motion addressed a letter to officials of the Virginia and Truckee Railway, calling attention to the lighting system on the passenger coaches of that company.

The Commission recommended the installation of a modern lighting system, instead of the use of oil lamps, which afforded very poor light and would be extremely dangerous in case of accident.

As a result of this recommendation the Virginia and Truckee Railway commenced to operate its passenger equipment with electric lights installed effective December 19, 1917.

Case No. 393—Shortage of Refrigerator Cars.

On February 16, 1917, a complaint was received from F. O. Stickney of Yerington, Nevada, stating that it was impossible for the potato shippers of Mason Valley to secure refrigerator cars for the transportation of their commodity to Pacific Coast and other markets.

This case was consolidated with Case No. 395.

Case No. 394—Shortage of Refrigerator Cars.

A complaint was received from G. H. Plummer of Yerington, Nevada, on February 16, 1917, making the same statement as was contained in the complaint of F. O. Stickney in Case No. 393.

This case was consolidated with Case No. 395.

Case No. 395—Car Shortage.

Under date of March 1, 1917, Cases Nos. 387, 393, and 394 were handled under this heading. These cases related to shortage of equipment for the transportation of coal into the State and refrigerator cars for the transportation of potatoes out of Mason Valley and the Dayton district. In addition to the above there was also an alleged shortage of equipment for the transportation of wood out of Westwood, Cal., to various Nevada points.

The question of coal equipment is fully covered under the heading of Case No. 387.

Under date of February 23, 1917, W. R. Scott, General Manager of the Southern Pacific Company, advised the Commission that ten refrigerator cars had been forwarded to the Mason Valley district and that two or three cars per day would be provided until shipments of potatoes had been moved. This action relieved the situation.

With respect to the shipment of wood from Westwood, Cal., the Red River Lumber Company claimed that the Southern Pacific Company had for the three weeks preceding March 17, 1917, refused to allow them to ship gondola cars loaded with wood to any points off the main line of

that railroad company. This matter was taken up by telegraph with Southern Pacific officials who, under date of March 20, 1917, advised that at that time there were 38 box-cars, 2 flat-cars, and 7 coal-cars at Westwood, and 17 box-cars, 16 flat-cars, and 7 coal-cars at Susanville ready to move into Westwood for loading lumber and wood. From it appeared that there was sufficient equipment to take care of the spring requirements at Westwood.

Case No. 396—Telephone Rates at Tuscarora.

On March 12, 1917, a petition was received from the Northern Nevada Telephone Company, requesting the Commission's approval of proposed increases in local telephone rates in the Tuscarora district.

Under date of April 6, 1917, the Commission advised the company to file its increased rate schedule, making the same effective on thirty days' notice, when such schedule would be subject to suspension pending hearing and investigation, provided the Commission deemed it to be in the public interest to suspend the schedule.

The petition was therefore dismissed.

Case No. 397—Flour and Grain Rates.

Under date of March 24, 1917, the Commission addressed a letter to officials of the Southern Pacific Company taking up the question of rates on flour in carload lots moving from Nevada flour-producing points.

The attention of the Southern Pacific Company was called to the fact that the Interstate Commerce Commission in its order covering Case No. 8441 (*The Utah-Idaho Millers and Grain Dealers Association v. The Denver and Rio Grande Railroad Company, et al.*) had required the carriers to establish rates on wheat flour amounting to a maximum of 5 cents per hundred pounds in excess of wheat rates.

As this order affected rates on flour from Utah and Idaho points to points located in Nevada, and as Nevada millers had to purchase considerable hard wheat from Utah and Idaho, the Nevada millers would be unable to compete in their own markets against the wheat flour from the two States named, in view of the existing differentials between flour and wheat rates in effect from Nevada milling points to California and Nevada markets. These differentials ranged from 10 to 15 cents per hundred pounds.

The Commission requested that rates on wheat flour from Reno, Kodak, Lovelock, Fallon, Wabuska, and other flour producing points in Nevada to Tonopah, Goldfield, Elko, Winnemucca, Lovelock, San Francisco, Stockton, Sacramento, and other points to which shipments were moving be amended so that such rates would not exceed the wheat rate by more than 5 cents per hundred pounds.

The Interstate Commerce Commission later opened the Utah-Idaho case for further hearing and investigation, and pending the disposition of the same no action was taken regarding the Nevada rates.

On May 17, 1917, the Interstate Commerce Commission reaffirmed its original order, and this Commission again took up the question of flour rates from Nevada points.

Under date of September 13, 1917, the Southern Pacific Company advised that tariffs were in the hands of the printer adjusting rates on flour in compliance with the request of the Commission.

As a result of the action the following illustrates a few of the adjustments:

From Reno, Nevada, to—	Flour rate, old	Flour rate, new	Reduction
Carlin.....	\$0.40½ cwt.	\$0.40 cwt.	\$0.00½ cwt.
Elko.....	.40½ cwt.	.40 cwt.	.00½ cwt.
Halleck.....	.45 cwt.	.40 cwt.	.05 cwt.
Deeth.....	.45 cwt.	.40 cwt.	.05 cwt.
Wells.....	.47½ cwt.	.40 cwt.	.07½ cwt.
Tecoma.....	.60 cwt.	.40 cwt.	.20 cwt.
Sacramento.....	.43 cwt.	.30 cwt.	.13 cwt.
San Francisco.....	.50 cwt.	.30 cwt.	.20 cwt.

Case No. 398—Cleaning and Fumigating Cattle Cars.

On March 26, 1917, the Commission filed a petition of intervention in Docket 9329, pending before the Interstate Commerce Commission. The case was entitled *The National Livestock Exchange v. Abilene and Southern Railway Company, et al.*

In this proceeding complainant attacked the rates charged by carriers in the United States for cleaning and disinfecting livestock cars. The charges usually assessed for this service was \$2.50 per car for single decks, and \$4 per car for double decks.

As these charges for the service referred to were of considerable importance to the livestock interests of Nevada, the Commission believed it advisable to intervene in the case. It was impossible for members of the Commission to appear personally at the hearing of this proceeding, which was held in Chicago on April 23, 1917. However, the interests of all livestock shippers were being protected by the National Livestock Exchange.

The Interstate Commerce Commission decided this case in July, 1918, and sustained the rates as charged by the carriers. The proceeding was therefore dismissed.

Case No. 399—Train Service on Virginia and Truckee Railway.

On February 23, 1917, an oral complaint was received from F. Golden of Reno, Nevada, against the Virginia and Truckee Railway, alleging that on a certain date the morning passenger train out of Reno had left him after the conductor had promised to hold the train a few minutes until complainant went after another passenger intending to leave on that train.

On being referred to the railroad company advice was received to the effect that the train had pulled out without complainant owing to the fact that the conductor had been informed that the two gentlemen were already aboard. The incident was regretted.

Complainant was notified of the action taken, and the case was dismissed.

Case No. 400—Safety Regulations.

On March 13, 1917, an oral complaint was received against the Steptoe Valley Smelting and Mining Company.

The complaint alleged that the mining company was operating dinkey engines and switch engines at McGill, Nevada, without headlights, and also recommended that some action be taken requiring the company to provide adequate markers and lights for equipment. It was also alleged that platforms were not sufficiently protected.

This matter was taken up with the general manager of the Steptoe Valley Smelting and Mining Company, who advised under date of

April, 12, 1917, that the questions complained of would be adjusted at the earliest possible moment.

Case No. 401—Hay and Straw Rates, Wabuska to Eastern Nevada Points.

On March 29, 1917, a complaint was received from W. T. McNeil of Wells, Nevada, against the Southern Pacific Company, alleging unreasonable rates on hay and straw in carload lots from Wabuska to Wells, Carlin, and other eastern Nevada points.

This matter was taken up informally with officials of the Southern Pacific Company, with the suggestion that the same rates be established from Wabuska as were then in effect from Fallon to various eastern Nevada points.

As a result of the investigation the Southern Pacific Company advised that there was little or no hay and straw moving from Wabuska to eastern Nevada, and that the establishment of lower rates was not justified.

On April 21, 1917, complainant was advised of the defendant company's position, and was asked to file a formal complaint provided it was still felt that the lower rates should be established. No formal complaint being filed by complainant within thirty days, the case was dismissed.

Case No. 402—Failure to Report Correct Time of Arrival of Passenger Trains.

On April 3, 1917, a complaint was received from H. A. B. Sneve, member of the Travelers' Protective Association of Reno, Nevada, against the Southern Pacific Company. In his complaint Mr. Sneve alleged that the traveling public was being greatly inconvenienced through the negligence of the operators in failing to properly post the arrival of trains at various stations in the State of Nevada.

This matter was taken up with officials of the Southern Pacific Company, who, after careful investigation, advised that proper instruction had been issued to all operators requiring them to properly post the arrival of trains for the information of the traveling public. It appeared that part of the trouble, at least, was caused by erroneous information sent to station operators by division offices.

On May 29, 1917, complainant advised that the complaint had been satisfactorily adjusted.

Case No. 403—Failure to Report Correct Time of Arrival of Passenger Trains.

On April 6, 1917, a complaint was received from the Travelers' Protective Association of America against the various railroad companies operating in Nevada, with respect to the inefficient manner in which the arrival of passenger trains was being posted at various stations in the State.

This case was handled in the same manner as Case No. 402, and assurance was received from all roads that proper action had been taken to correct the existing trouble.

The case was therefore closed June 6, 1917.

Case No. 404—Rates on Soap, Carloads, from Reno.

On April 19, 1917, a complaint was received from the Commercial Soap Company of Reno, Nevada, against the Southern Pacific Company and Nevada Northern Railway Company, alleging unreasonable rates on soap in carload lots from Reno to Winnemucca and East Ely, Nevada. Complainant requested the establishment of a rate not to

d 35 cents per hundred pounds to Winnemucca and 80 cents per hundred pounds to East Ely.

Under date of April 21, 1917, the Commission took this question up with officials of the Southern Pacific Company, with a view to securing adjustment informally. On May 1, 1917, the defendant company presented the Commission, stating that after investigation it was found there was no commercial necessity for establishing the rates requested by complainant.

May 7, 1917, the Commercial Soap Company was advised of the action taken by the Southern Pacific Company, and requested to file formal complaint if it was still felt that the existing rates should be reduced. Nothing being heard from complainant within thirty days, the case was dismissed.

No. 405—Abandonment of Train Service on Eureka Nevada Railway.

May 2, 1917, a telegraphic complaint was received from J. M. Egg of Palisade, Nevada, against the Eureka Nevada Railway Company, alleging that the defendant company had given notice that it would abandon all train service at once.

A large amount of correspondence was carried on regarding this case and it resulted in the restoration of regular freight and passenger service within about forty-five days.

It appeared that the general manager of the Nevada Transportation Company, which operates the Eureka Nevada Railway, had decided to abandon service owing to a controversy between the Postoffice Department and his road. As this was a question over which neither the people of this State nor the Railroad Commission had any jurisdiction, the Commission took the position that train service must be maintained by the company regardless of any controversy which might

May 3, 1917, the Nevada Transportation Company was advised that unless train service was resumed at once a receiver for the road would be applied for. Under date of May 6, 1917, the general manager of the company notified the Commission that orders had been given to run trains once a week between Palisade and Eureka in order to take care of the people of Eureka who were running short of supplies.

After the reestablishment of train service the defendant company refused to accept interstate bills of lading, as all interstate tariffs had been canceled. This caused considerable inconvenience to the shipping companies located on this line of railroad, as it became necessary to rebill interstate freight at Palisade, Nevada. Effective September 10, 1917, all interstate rates were reestablished.

No. 406—Fifteen-Per-Cent Advance-Rate Cases.

May 19, 1917, the Railroad Commission of Nevada formally made its appearance before the Interstate Commerce Commission, declining protest with that body against the proposed 15 per cent advance in freight rates applied for by all of the railroads operating in the United States.

Chairman Bartine appeared before the Interstate Commerce Commission in the preliminary hearing of this case, which was held in Washington, D. C., on April 20, 1917, but members of the Commission found it impossible to attend subsequent hearings.

June 27, 1917, the Interstate Commerce Commission rendered an

opinion and order allowing certain increases in class rates between points in official territory and also small increases in freight rates applying to bituminous coal, coke, and iron ore in all the territory. All other increases were suspended until October 28, 1917.

Later all carriers withdrew their applications for a general 15 cent advance in freight rates.

For Fifteen-Per-Cent Advance-Rate Cases in Nevada, see Investigation and Suspension Dockets 8 to 15, inclusive.

Case No. 407—Condition of Road-Bed and Equipment on Nevada Interurban Railway.

On May 20, 1917, a complaint was received through the City Attorney of Reno, Nevada, from the City Council of Reno against Nevada Interurban Railway, an electric line running between the city of Reno and Moana Springs, Nevada.

The complaint alleged that the road-bed of the railway and equipment operated by the company were in bad condition owing to lack of repair and upkeep and to physical deterioration. The Commission was requested to take such action as might be necessary in the premises to render the road-bed and equipment safe and suitable for the transportation of passengers.

On June 9, 1917, the Commission issued a citation to the defendant company, giving it until June 22, 1917, in which to file answer to the complaint. The answer was filed June 20, 1917.

The case was heard by the Commission on July 12, 1917, and a further hearing was held on July 27, 1917. Both hearings were held in the city of Reno, Nevada.

On request of complainant the Commission has withheld its decision in this proceeding. It is understood that the defendant company has made repairs to its road-bed and equipment satisfactory to the City Council of Reno. The case is therefore held in abeyance.

Cases Nos. 408, 409—Livestock Loss and Damage Claim.

On June 6, 1917, two standard loss and damage claims were filed with the Commission by R. F. Raine of Palisade, Nevada. The claims were against the Southern Pacific Company and Western Pacific Railroad Company in the sum of \$500 each.

These claims were returned to Mr. Raine with the recommendation that he file them with the proper officials of the railroad companies which had never received the same for consideration. The case was therefore dismissed.

Case No. 410—Rates on Scrap Iron.

On June 13, 1917, a complaint was received from Campbell & Keen of Tonopah, Nevada, against the Bullfrog Goldfield Railroad Company and Tonopah and Goldfield Railroad Company. Complainant alleged that the rate of \$8 per ton applicable to scrap iron in carload lots from Beatty to Tonopah, Nevada, was unreasonable and asked for the establishment of a reasonable charge for the transportation of the commodity.

This matter was taken up with officials of the two railroad companies, who notified the Commission under date of September 7, 1917, that complainant had been advised that a joint rate of \$4.70 per

would be established on scrap iron, carloads, from Beatty to Tonopah. As this rate was satisfactory to complainant, the case was closed.

Case No. 411—Safety of Employees Endangered by Buildings Too Near Spur Tracks at Elko.

On June 20, 1917, a complaint was received from Harry Wilson Lodge, No. 313, Brotherhood of Railroad Trainmen, of Winnemucca, Nevada, against the Western Pacific Railroad Company. Complainant alleged that certain buildings on the spur tracks of the defendant company at Elko, Nevada, were built too close to such tracks for the safety of railroad employees.

This question was taken up with officials of the Western Pacific Railroad Company, who, under date of August 8, 1917, advised that the matters complained of had been remedied. The case was therefore closed.

Case No. 412—Telephone Service.

On June 24, 1917, a complaint was received from ten subscribers on the telephone line operated by A. S. Bryant of Bridgeport, Cal. This line is operated under the name of the Bridgeport Telephone and Telegraph Company. Complainants alleged extremely poor telephone service and asked the Commission to have the same remedied.

A personal conference was held with Mr. Bryant regarding this matter, who stated that he would endeavor to remedy the defective service as soon as possible. Nothing further being heard from complainants, the Commission assumed that satisfactory service was being rendered. The case is therefore considered closed.

Case No. 413—Rates on Soda Ash, Keeler, Cal., to Belleville, Nevada.

On June 29, 1917, a complaint was received from the Belleville Tailings Association of Belleville, Nevada, against the Southern Pacific Company.

Complainant alleged that a shipment of 2,207 pounds of soda ash had been received at Belleville from Keeler, Cal., upon which charges had been assessed on the basis of 87 cents per hundred pounds. It was further alleged that the Southern Pacific Company had in effect a less-than-carload commodity rate of 50 cents per hundred pounds applicable to shipments of soda ash moving from Keeler, Cal., to Reno, Nevada. As Belleville is intermediate to both Keeler and Reno, the Commission was requested to secure the application of the 50-cent rate on the shipment of soda ash complained of.

Under date of September 11, 1917, the Southern Pacific Company advised that it would be glad to apply to the Interstate Commerce Commission for permission to make the refund on the basis of complainant's request. Complainant was notified of the action taken and the case was closed.

Case No. 414—Claim for Refund on Shipment of Ore.

On July 6, 1917, a complaint was received from John T. Reid of Lovelock, Nevada, against the Southern Pacific Company. Complainant alleged that a carload shipment of antimony ore had been forwarded from Lovelock, Nevada, to Seattle, Wash., with instructions to sample at Hazen, Nevada. Through oversight or negligence the shipment was forwarded to destination without sampling at Hazen. Com-

plainant stated that owing to the defendant company's error in negotiating to have the car or ore stopped at Hazen for sampling in transit, a loss of \$205.20 was sustained.

It appeared that the Washington smelter had made certain deductions in the value of the ore on account of arsenic content, and found that the value on antimony had dropped between the time the shipment passed Hazen and the time it was delivered in Seattle. Complainant would have reconsigned the ore to an eastern point had the same in transit at Hazen developed the fact that the ore contained arsenic. The eastern concerns making no deductions on that account. Had arsenic had been found at Hazen, the ore would have been forwarded on to Seattle, and the smelter would have made settlement at Hazen on the basis of the market price for antimony on the date of sampling. Therefore complainant asked that the Southern Pacific Company be required to refund the sum of \$205.20.

This matter was taken up with officials of the defendant company, and correspondence was interchanged regarding the same at intervals during the entire year. The Commission took the position that refund should be made. On January 28, 1918, the Southern Pacific Company advised that refund could not be made. The company's legal department stated that the railroad could not be held responsible for deductions made by the smelter on account of the arsenic content in the ore, as that was a matter of contract between complainant and the smelter, and any damages accruing on this account should be collected from the smelter people.

The claim for reparation on account of the drop in market value between the time the shipment passed Hazen and the time it arrived in Seattle was objected to on the grounds that the claim was based on a secret complication of contractual relations said to exist between shipper and consignee, and which contractual relations were said to call for the assessment of damage upon a different basis than that prescribed by contract set forth in the bill of lading, incorporated in and made part of the tariff, contract being to the effect in substance that no damage if any is to be computed on basis of market value at the time and place of shipment.

On January 31, 1918, complainant was notified of the action taken by the Southern Pacific Company, and advised that as the Commission had no power to enforce the payment of claims it would be necessary to carry the question into a court of proper jurisdiction if it was felt that the claim should be paid.

Case No. 415—Refund Claim on Shipment of Ore Sacks, Returning.

On July 11, 1917, a complaint was received from John T. [Name] against the Southern Pacific Company and other carriers asking for a refund of \$4.69 on a shipment of ore sacks returned from Chicago to Kodak, Nevada.

The facts, as outlined by complainant, were as follows:

On May 29, 1916, a carload of antimony ore was shipped by complainant from Kodak, Nevada, to East Chicago, Indiana, with instructions to stop for sampling in transit at Murray, Utah. The shipment was carried through to East Chicago without being stopped for sampling in transit. Had the car been stopped in line with instructions the ore which was forwarded from Kodak in sacks would have

moved from Muray to East Chicago in bulk and the sacks returned to Kodak from Murray, thereby saving charges on the empty sacks amounting to \$4.09 in freight and 60 cents in drayage, a total of \$4.69.

This case was handled in a similar manner to that in which Case No. 414 was handled. The Commission took the position that refund should be made owing to the negligence of the carrier failing to stop the car of ore for sampling in transit according to instructions contained on the original bill of lading covering the shipment.

Under date of January 28, 1918, the Southern Pacific Company advised that this case was in process of adjustment and that refund would be made to complainant at an early date. The case was therefore closed.

Case No. 416—Night Telephone Service at Ely.

On July 22, 1917, a complaint was received from G. F. Boreman, City Attorney of Ely, Nevada, written on behalf of several citizens of Ely, against the White Pine Telephone Company.

Complainant alleged that it was practically impossible to raise central after 1 or 2 o'clock in the morning, except after long and continuous ringing. An incident was cited where an accident had occurred during the early hours of the morning which made it necessary to call a doctor as quickly as possible. It appears that it took forty minutes to get in touch with the central office of the company.

This matter was taken up with officials of the defendant company who assured the Commission under date of July 27, 1917, that they regretted the poor service referred to in the complaint, and that every effort would be made to see that first-class service was rendered.

Under date of July 26, 1917, complainant requested that the complaint be withdrawn. The case was therefore closed.

Case No. 417—Water for Live Stock in Railroad Corrals at Hudson.

On July 19, 1917, a complaint was received from C. G. Foster of Simpson, Nevada, against the Nevada Copper Belt Railroad Company, alleging that a shipment of hogs had been delivered by complainant to the railroad company at Hudson for shipment; that the hogs were held in the stock corrals at Hudson overnight; that there was no water in the troughs, and complainant was forced to haul water from the river in a gasoline drum and when the same was placed in the troughs it was found that the same would not hold water. Before sufficient water could be gotten to the corrals two hogs died, their total value being \$55.

Complainant asked the Commission to investigate the matter with a view to requiring improved service, and inquired whether he was entitled to reparation on the damage incurred through negligence of the railroad company.

The Commission took the question up with officials of the defendant company and advised the shipper to file claim for the damage sustained.

Under date of July 22, 1917, the Nevada Copper Belt Railroad Company notified the Commission that the service complained of would be immediately corrected, and stated that the incident was regretted.

Complainant was so notified on July 31, 1917, and the case was closed.

Case No. 418—Coal Shipments from Denver and Rio Grande Railroad Points.

On August 1, 1917, a letter was received signed by the Cameron Coal

Company, Independent Coal and Coke Company, Spring Canyon Company, and the Standard Coal Company, all of Salt Lake City, Utah. The Commission was requested to use its best offices in securing relief from the threatened coal famine. It appeared that, owing to heavy washouts on the Denver and Rio Grande Railroad and also owing to shortage of motive power, that railroad would be unable to handle coal shipments efficiently during the fall and winter of 1917.

In connection with this matter a letter was received from the general manager of the Eureka Nevada Railway stating that the road was practically out of coal and that, unless shipments were secured, operations would have to be discontinued by August 11, 1917.

Telegrams were forwarded to the Interstate Commerce Commission, the Union Pacific System, and the Denver and Rio Grande Railroad with respect to the fuel shortage on the Eureka Nevada Railway and an endeavor to secure prompt movement of shipments of coal consigned to that railroad. On August 9, 1917, the Eureka Nevada Railway advised that it had received a carload of coal which temporarily, at least, relieved the situation.

With respect to the general situation, a large amount of correspondence was interchanged with officials of the Interstate Commerce Commission, and the various railroads. It became necessary, in the opinion of the Commission, to recommend to the Interstate Commerce Commission that the Denver and Rio Grande Railroad Company be required to place an embargo on through freight in order to release sufficient motive power and equipment to take care of the movement of coal.

Before this case came to a final termination, the United States Fuel Administration was created and took charge of all matters pertaining to the movement of coal. The Utah and Wyoming situation was finally relieved by the establishment of a district car-service bureau in Utah which superintended the distribution of coal under the direction of the Fuel Administration.

Case No. 419—Loss of Shipment of Household Goods.

On August 13, 1917, a complaint was received from Rev. B. H. Leif of Egan, S. D., against the Nevada-California-Oregon Railway and other carriers, regarding the loss of a shipment of household goods forwarded from Lakeview, Oreg., to Egan, S. D., on June 4, 1917.

Although this was a question not under the jurisdiction of the Commission, an endeavor was made to trace the shipment in question through officials of the Nevada-California-Oregon Railway, the Western Pacific Railroad Company, the Denver and Rio Grande Railroad Company and the Union Pacific System.

Delivery of the household goods was traced to the Chicago, Milwaukee and St. Paul Railway at Omaha, and complainant was notified. As nothing further was heard from complainant, it was assumed that the shipment was received.

Case No. 420—Rate on Second-Hand Rails, Millers to Hazen.

On August 21, 1917, a complaint was received from the Western Purchasing Company at Hazen, Nevada, against the Tonopah and Goldfield Railroad Company and Southern Pacific Company. The Commission was requested to secure an equitable adjustment of the rates applicable to shipments of second-hand rails moving from Millers, Nevada, to Hazen, Nevada.

It appeared that the two railroad companies had joined in a rate of 50 cents per hundred pounds to cover the movement of second-hand machinery and lumber from Millers to Hazen, such rate taking effect May 8, 1917, and expiring June 8, 1917. Several shipments of second-hand rails moved between the points named upon which charges were assessed on the basis of 93 cents per hundredweight. Complainant asked for the protection of the 50-cent rate on rail shipments.

Under date of August 25, 1917, this matter was taken up with the Tonopah and Goldfield Railroad Company recommending the protection of the 50 cents per hundred pounds rate.

On September 25, 1917, the Commission was advised that both carriers were agreeable to the protection of the rate recommended by the Commission, and the case was therefore closed.

Case No. 421—Shortage of Coke at Thompson Smelter.

On August 22, 1917, a complaint was received from S. W. Belford, on behalf of the Mason Valley Mines Company against the Southern Pacific Company and other carriers transporting coke from Utah and Colorado points to Thompson, Nevada. It was alleged that owing to the fuel shortage the Mason Valley Mines Company smelter at Thompson had been forced to discontinue the operation of one of its units. The Commission was requested to use its influence in securing relief.

This matter was taken up with the Interstate Commerce Commission by telegraph and a reply was received to the effect that the question would be immediately investigated.

Under date of September 6, 1917, the Commission was advised by complainant that the movement of coke shipments to Thompson had greatly improved, particularly from Utah. Later on the Colorado situation was also improved and the smelter was provided with sufficient coke to operate both units. The case was therefore closed.

Case No. 422—Loss of Shipment of Bees.

On August 12, 1917, a complaint was received from Clark J. Guild of Yerington, Nevada, against the Southern Pacific Company and Atchison, Topeka and Santa Fe Railway Company. Complainant alleged that his brother, H. C. Guild, had purchased a carload of bees from Jos. Walrath of Oakley, Cal., the car being forwarded from Oakley on May 30, 1917, billed to H. C. Guild at Yerington, Nevada, and routed via Atchison, Topeka and Santa Fe Railway to Stockton, Cal., thence Southern Pacific Company to Wabuska, Nevada, and Nevada Copper Belt Railroad Company to destination. Owing to a proclamation issued by the state authorities of Nevada prohibiting the shipment of bees into the State, the car in question was stopped at Sparks, Nevada. The consignment was therefore a complete loss to complainant's brother.

Complainant contended that neither shipper nor consignee knew of the embargo on bee shipments to Nevada, while the railroads did, and consequently should stand the damages, amounting to over \$500, as the Atchison, Topeka and Santa Fe Railway Company should have refused to accept the shipment at Oakley.

The Commission advised complainant that the matter would be handled informally with a view to securing an adjustment of the claim, although it was without jurisdiction over damage claims of either an interstate or intrastate character.

After considerable correspondence a letter was received from Atchison, Topeka and Santa Fe Railway Company under date of August 15, 1918, offering to refund the sum of \$45 to H. C. Guild. It was contended that the bees had been returned to Oakley, and were inspected at Stockton, where it was found that they had not been properly shipped, thereby causing a large amount of loss of the bees. It was stated that if the hives had been properly equipped the shipment would have been in as good a condition upon its return to Oakley as when shipped. The company sold the bees at Oakley, realizing \$5 on the sale. As it cost \$5 for inspecting the shipment, the net proceeds were only \$45, which the company offered to refund.

On April 19, 1918, complainant was notified of the proposed adjustment and advised to have H. C. Guild file damage suit either against the carriers or shipper if the same was not satisfactory. The case was therefore closed.

Case No. 423—Rates on Honey, Less Than Carloads.

On August 25, 1917, the Commission, on its own motion, took up the question of rates on honey in less-than-carload lots between various points on the Southern Pacific Company's lines in Nevada.

It was found that rates of 65 cents per hundred pounds had been voluntarily established by the Southern Pacific Company from points on its Nevada and California Railway Branch in California to Wabuska, Nevada, applicable to less-than-carload shipments of honey in the comb boxed. Rates prevailing between points in Nevada amounted to two and one-half times the first-class rate. The company was requested to establish rates on this commodity between honey-producing and -consuming points in Nevada not to exceed first-class rates.

Under date of February 27, 1918, the defendant company advised that, owing to the fact that rates on honey out of Laws and other California points on its Nevada and California Railway Branch had been established for emergency purposes to take care of the surplus honey produced at those points, such rates should not be used for comparative purposes in ascertaining what reasonable rates would be for the transportation of the commodity between other points. It was therefore stated that the company could not at that time readjust rates in Nevada as suggested by the Commission.

This case has been held in abeyance by the Commission since February 27, 1918.

Case No. 424—Rate on Grading Machine, Sodaville to Carson City.

On August 27, 1917, a complaint was received from S. A. Imhoff against the Southern Pacific Company and Virginia and Truckee Railway, alleging the assessment of an unreasonably high rate for transportation of a second-hand grading machine from Sodaville to Carson City, Nevada.

Upon investigation it was found that the proper rate had been assessed on the shipment in question; namely, Class A of 71 cents per hundredweight. The total weight of the outfit was 27,600 pounds and charges amounted to \$195.96. The Commission considered that the rate in question was extremely high for the transportation of a second-hand article between the points named, and therefore requested the two

riers interested in the haul to establish a through rate of 40 or 45 cents per hundred pounds to cover this particular movement.

On November 12, 1917, the Southern Pacific Company advised that it was agreeable to the protection of a rate of 50 cents per hundred pounds on the shipment in question. The Virginia and Truckee later advised that it would join in a 50-cent rate.

As this adjustment was satisfactory to complainant, the Commission under its Refund Authority No. 181, dated January 25, 1918, authorized a refund of \$61.36 to complainant, and the case was closed.

Case No. 425—Refusal of Prince Consolidated Mining and Smelting Company to Render Freight Service on its Line of Railroad.

On September 2, 1917, a formal complaint was received from the Virginia Louise Mining Company against the Prince Consolidated Mining and Smelting Company. In the complaint it was alleged that the defendant company operated a line of railroad between Pioche, Nevada, and its mine, a distance of approximately eight miles. It was further alleged that, while the Prince Consolidated Mining and Smelting Company had been rendering freight service to various mines and leasers located on its line of railroad, the complainant had been denied such service. The Commission was requested to compel the defendant company to render freight service to complainant.

Citation was issued to the Prince Consolidated Mining and Smelting Company on September 8, 1917, which was given fifteen days after service of summons in which to file its answer to the complaint. The answer was duly filed on October 1, 1917.

The hearing in this proceeding was held at Pioche, Nevada, before Commissioner Shaughnessy, on October 30 and 31 and November 1, 1917. F. R. McNamee, Wm. E. Orr, and Leo A. McNamee appeared for complainants, and Dickson, Ellis & Lucas, Edwards & Wasson, and A. L. Scott appeared for defendants.

On December 2, 1917, a petition of intervention was filed which was signed by various prospectors, miners, and mine owners of Pioche, Nevada. The petition was filed and made of record in the proceeding, and the parties signing the same were allowed to intervene in the case.

Plaintiff's brief was filed on January 10, 1918, and defendant's on January 11, 1918. The case was argued before Commissioner Simmons at Carson City, Nevada, on February 5, 1918, arguments being made by Messrs. F. R. McNamee, A. C. Ellis, and S. W. Belford.

On May 5, 1918, the following stipulation was received signed by the attorneys for both parties to the proceeding:

IT IS HEREBY STIPULATED AND AGREED By and between the respective parties in the case of *The Virginia Louise Mining Company (a Corporation) v. Prince Consolidated Mining and Smelting Company (a Corporation)* by their respective attorneys and the attorneys for all protestants and petitioners in the above-entitled cause that the above-entitled proceeding and all matters relative and pertaining thereto be forever dismissed, and that an order be entered by the Railroad Commission of Nevada dismissing said proceeding and all matters relative and pertaining thereto, the same having been adjusted to the full satisfaction of all parties hereto.

Therefore, under date of May 27, 1918, this case was formally dismissed and all parties were duly notified.

Case No. 426—Delay in Receiving Coal Shipments.

On September 22, 1917, a complaint was received from C. B. I. of Fallon, Nevada, against the Southern Pacific Company and Denver and Rio Grande Railroad Company. It was alleged that a car of coal had been forwarded from Clear Creek, Utah, by the Utah Fuel Company on September 4, 1917, and had not been received by complainant in Fallon, Nevada, on September 21, 1917, seventeen days later.

This matter was taken up with the superintendent of the Southern Pacific Company at Ogden, Utah, with the request that he trace the shipment in question and to advise what action could be taken to secure more prompt deliveries of coal shipments.

On September 28, 1917, the Southern Pacific Company advised that the car referred to in the complaint had not been received by that company until September 17, 1917, and was forwarded west on September 19, 1917. It appeared that the delay was caused by the Denver and Rio Grande Railroad and that no delay occurred on the Southern Pacific lines.

Complainant was advised of the action taken, and the case was closed.

Case No. 427—Tourist Passenger Fares from Eastern to Nevada Points.

On September 23, 1917, a complaint was received from W. T. McCarlin, Nevada, against the Southern Pacific Company, alleging discrimination in favor of Utah and California as against Nevada in the matter of tourist passenger fares from eastern to Pacific Coast points.

A letter was addressed to complainant requesting further information with regard to his complaint, and no reply to the same being received within thirty days, the case was dismissed.

Case No. 428—Loss of Meat Shipments, Reno to Eureka.

On October 1, 1917, a complaint was received from the Hump Supply Company of Reno, Nevada, against the Southern Pacific Company and Eureka Nevada Railway Company. Complainant alleged that during the month of March, 1917, two shipments of sausage had been forwarded to Eureka, Nevada, but that, owing to washouts on the Eureka Nevada Railway, the shipments had not been delivered to the consignee and the same had been returned to complainant at Reno in a spoiled condition. The Southern Pacific agency at Reno had investigated the goods upon their return and acknowledged that the same were unfit for use, and shipper was informed that there would be no fault in securing reparation. However, complainant was unable to secure reparation for the damaged goods, and asked the Commission to secure an adjustment.

The Commission informed complainant that it had no direct jurisdiction over damage claims, but that the question would be taken up with officials of the railroad companies with a view to securing an adjustment if possible.

The matter was taken up with the Southern Pacific Company, but up to the time of closing this report no definite action has been taken with respect to adjusting the same. The case is therefore held in abeyance.

Case No. 429—Freight and Passenger Rates to and from Searchlight.

On August 8, 1917, a complaint was received from W. W. Wishon of Searchlight, Nevada, against the Atchison, Topeka and Santa Fe Railway Company. Complainant alleged that the existing freight and passenger rates between points in California and Searchlight, Nevada, were exorbitant, and requested an investigation of the same.

The Commission made an investigation of the tariffs in effect between California points and Searchlight, Nevada, and found that rates were similar to those in effect between California points and those located in southern Nevada mining districts. No definite action was taken in this proceeding, for the reason that the rates were all interstate in character, and therefore entirely within the jurisdiction of the Interstate Commerce Commission. Carriers generally were applying for increased rates, and government control of railroads was anticipated at an early date. The Commission therefore felt that the time was inopportune for taking the question up formally with the Interstate Commerce Commission, and the matter is still being held in abeyance.

Case No. 430—Express Bullion Rates to Carson City from Various Nevada Points.

On October 17, 1917, a complaint was received from a committee on express rates of Carson City, Nevada, against Wells Fargo & Co. Express and The American Express Company. Complainant alleged that the prevailing express rates on bullion from various points on defendant's system in Nevada to Carson City, Nevada, were exorbitant and discriminatory against Carson City when compared with bullion rates from Nevada points to San Francisco, Cal., and Salt Lake City, Utah. The Commission was requested to secure an equitable adjustment of these rates with a view to securing the adoption of a schedule which would allow bullion to move from Nevada points to the United States Assay Office at Carson City, Nevada.

The following schedule sets forth the mileage from various Nevada bullion-producing points to San Francisco, Cal., and Carson City, Nevada, together with the existing rate per \$1,000 on silver bullion to the two points named:

From—	Distance		Rate per \$1,000	
	To San Francisco	To Carson City	To San Francisco	To Carson City
Rochester.....	369.8 miles	157.9 miles	\$2.35	\$2.50
Austin.....	569.1 miles	357.2 miles	3.00	3.70
Eureka.....	609.7 miles	397.8 miles	3.50	4.45
Pioche.....	1,170.3 miles	958.4 miles	3.85	3.85
Goldfield.....	517.0 miles	237.2 miles	3.15	2.85
Tonopah.....	486.0 miles	207.2 miles	2.80	2.50
Thorne.....	384.4 miles	104.6 miles	2.50	2.00

The following is a similar schedule, eliminating the mileage, setting forth the prevailing rates per \$1,000 on gold bullion:

From—	To San Francisco	To Carson City
Rochester.....	\$0.85	\$0.85
Austin.....	1.00	1.25
Eureka.....	1.25	1.25
Pioche.....	1.25	1.25
Goldfield.....	1.25	1.00
Tonopah.....	1.00	.85
Thorne.....	.85	.75

The question of readjusting these rates was taken up with officials of Wells Fargo & Co. and The American Express Company, and under date of November 28, 1917, the Commission was advised that the com-

panies were agreeable to making certain modifications in the then existing rates. Following is a schedule of the proposed rates per \$1,000 on bullion as compared with those in effect at that time:

From—	Silver to Carson City		Gold to Carson City	
	Current rate	Proposed	Current rate	Proposed
Rochester.....	\$2.50	\$1.55	\$0.85	\$0.75
Austin.....	3.70	2.60	1.25	1.00
Eureka.....	4.45	2.85	1.25	1.00
Pioche.....	3.85	3.80	1.25	1.25
Goldfield.....	2.85	2.35	1.00	.85
Tonopah.....	2.50	2.10	.85	.85
Thorne.....	2.00	1.55	.75	.75

On December 3, 1917, a copy of the proposed adjustment was transmitted to the Express Committee of Carson City, with the request that the Commission be advised whether the proposed rates were satisfactory.

Under date of February 1, 1918, complainant advised that the adjustment offered was not satisfactory, and requested further modifications in the rates to Carson City.

On March 4, 1918, the traffic manager of Wells Fargo & Co. suggested that a conference be called for the purpose of informally discussing the rates under consideration. Owing to conflicting dates it has been impossible to get all parties together for the purpose of a conference up to the time of closing this report.

Pending a final determination of the questions involved, the express companies have established the rates as proposed in their letter of November 28, 1917, which partially adjusts the case.

Case No. 431—Flour Rates from Reno to Fernley-Lassen Branch Points of Southern Pacific Company.

On October 25, 1917, a complaint was received from the Riverside Mill Company of Reno, Nevada, against the Southern Pacific Company. Complainant alleged that, effective November 25, 1917, the defendant company proposed to establish carload flour rates from points on its Fernley-Lassen Branch to Reno, Nevada, which were lower than the rates from Reno to points located on that branch. As these rates were interstate in character, the Commission was requested to file a protest with the Interstate Commerce Commission asking for a suspension of the reduced rates from the Fernley-Lassen Branch points to Reno pending investigation.

The Commission found, after investigation, that the rates complained of had been in effect since January 28, 1916, and were not to be made effective November 25, 1917, as understood by complainant. Therefore it was useless to request the Interstate Commerce Commission to suspend rates that were already in effect. It was further found that the rates out of Reno, Nevada, to Southern Pacific Company's Fernley-Lassen Branch points were from 5 to 7½ cents per hundred pounds higher than the rates in the reverse direction, but the minimum carload weight from Reno was 20,000 pounds as against a minimum of 30,000 pounds on flour to that point. The case was therefore dismissed.

Case No. 432—Passenger-Train Service at Riepetown.

On November 1, 1917, a petition was received which was signed by various residents of Riepetown, Nevada, requesting the Commission to compel the Nevada Northern Railway Company to stop its passenger

trains at Riepetown for the purpose of taking on and letting off passengers.

This matter was taken up informally with the management of the Nevada Northern Railway Company who advised under date of November 23, 1917, that after the town referred to had burned down the company had discontinued stopping its passenger trains at that point. It was further stated that the town had been rebuilt, but consisted of nothing but a collection of dance-houses and saloons which were located about the same distance from the old stopping-point for Riepetown and the present station of Kimberly, where the Consolidated Copper Mines are located and where regular passenger-train stops are made.

On December 20, 1917, the Commission received a petition signed by residents of Kimberly, Nevada, protesting against the stopping of passenger trains at Riepetown.

As the residents of Riepetown did not press this matter formally, and it was impossible to secure an informal adjustment of the question, the case was held in abeyance with the idea that formal proceedings might be instituted.

Case No. 433—Delay in Handling Fuel-Oil Shipments on Nevada-California-Oregon Railway.

On November 1, 1917, a complaint was received from the Nixon Nevada Mining Company of Purdy, Cal., against Nevada-California-Oregon Railway Company. Complainant alleged that it was equipped to handle 1,500 gallons of fuel oil a day. It was also alleged that the defendant company was in a position to handle 4,500 gallons of fuel oil a day, but that during a month period only 12,500 gallons of fuel oil had been furnished to the mine. It appeared that unless increased shipments of oil were secured by complainant there was danger of the mine becoming flooded owing to an insufficient supply of oil to run the pumps.

This question was taken up with officials of the defendant company who, under date of November 13, 1917, advised that improved service would be rendered complainant and no further trouble was looked for.

The case was therefore closed, complainant being advised of the action taken.

Case No. 434—Rates on Lime, Sloan to Thorne, Nevada.

On November 6, 1917, a complaint was received from the Nevada Lime and Plaster Company of Las Vegas, Nevada, against the Los Angeles and Salt Lake Railroad Company, the Las Vegas and Tonopah Railroad Company, the Bullfrog Goldfield Railroad Company, the Tonopah and Goldfield Railroad Company, and the Southern Pacific Company. Complainant alleged that the existing rate on lime in car-load lots from Sloan, Nevada, to Thorne, Nevada, was unreasonably high and prohibited the movement of the commodity between the points named. The Commission was requested to secure the establishment of a rate of \$8.50 per ton, which complainant considered a reasonable rate for the service.

The Commission urged the defendant carriers to establish the rate requested, and a large amount of correspondence was interchanged regarding the subject. It appeared that all were agreed that the

through rate of \$8.50 per ton was reasonable, provided each line served the division it thought it ought to have.

The Commission felt that it would be impossible to secure an agreement of this case informally, and therefore formally cited the defendant companies to appear and show cause why a through rate of \$8.50 per ton should not be established to cover the movement of live stock and coal loads from Sloan to Thorne, Nevada.

The case was set for hearing to take place in Carson City, on March 14, 1918, but a letter was received from the freight traffic manager of the Southern Pacific Company on March 7, 1918, stating that the defendant carriers had come to an agreement regarding division of rates and that the \$8.50 per ton rate would be published and made effective.

The date of hearing was therefore indefinitely postponed. On March 21, 1918, the rate was made effective, and the case was closed.

Case No. 435—Rates on Coal from Coaldale to Nevada Points.

On November 15, 1917, a request was received from the Darms Mining Company of Coaldale, Nevada, asking that the Commission secure the establishment of a rate of \$3 per ton on coal from Coaldale to Reno, Nevada, and also reduced rates from Coaldale to Tonopah and Goldfield, Nevada. It was stated that the mining company had four to five thousand tons of coal in sight, but that the expense of mining and transporting the same to the railroad siding at Coaldale was extremely high, therefore necessitating the establishment of lower rates to allow the commodity to move.

This matter was taken up by telegraph with officials of the Tonopah and Goldfield Railroad Company and the Southern Pacific Company, urging the adoption of rates which would allow this coal to move. The Commission deemed it of the greatest importance to develop property in Nevada if possible.

The Tonopah and Goldfield Railroad Company replied under date of November 15, 1917, stating that, while there were grave doubts as to the commercial value of the coal mined at Coaldale, the company was willing to adopt one of two plans to aid in the development of the property.

The first plan was to transport one or two cars to each of the points of Reno, Tonopah, and Goldfield free of charge, and if it was found that the coal made a good fuel and would be used by the people at these points named, equitable freight rates would be established to cover further shipments.

The second plan was to establish the same rate on coal from Coaldale to Reno as was in effect from Reno to Coaldale, namely, \$6.35 per ton, and also to establish the same rates from Coaldale to Tonopah and Goldfield as were formerly in effect of \$2 per ton to Tonopah and \$2.80 per ton to Goldfield. It was suggested that if this plan were adopted, the rates should be experimental and limited to a certain number of shipments, to be canceled after the movement of the same if the enterprise was unsuccessful or other rates established if necessary for future shipments.

The Darms Coal Company was notified of the proposals of the Tonopah and Goldfield Railroad Company and under date of December 1, 1917, requested the Commission's approval of the first plan suggested by the railroad company. The company was notified accordingly.

ied on December 12, 1917, that if the coal company would make its arrangements to ship the cars of coal to Tonopah and Goldfield where was badly needed that the same would be handled free of charge. Under date of February 4, 1918, the Darms Coal Company advised it would be unable to take advantage of the offer of the Tonopah Goldfield Railroad Company as the vein of coal was found to be small to use for shipping purposes. The case was therefore closed.

No. 436—Station Service at Deeth.

On November 16, 1917, the Chief Engineer of the Commission advised that he had been in receipt of a complaint from William Kearns against the Western Pacific Railroad Company, alleging that several parties had been forced to wait outside of the depot at Deeth, Nevada, from 8:30 p. m. till 11 p. m. for a passenger train on November 13, 1917. The depot had been locked, and it was impossible for prospective passengers to secure entrance, thereby being forced to wait outside in the cold.

This matter was taken up with the general superintendent of the Western Pacific Railroad Company, who advised under date of November 27, 1917, that instructions had been issued to the agent at Deeth in case the evening train was late the waiting-room door of the depot must be left open, with fire in the heating stove and fuel available for replenishment so that passengers waiting for trains may be comfortable.

As this adjustment was satisfactory, the case was closed.

No. 437—Toll Rates of Moapa Telephone Company.

On November 17, 1917, a letter was received from the Moapa Telephone Company complaining of the fact that railroad employees acting as Western Union Telegraph Company operators were insisting on using the telephone line of the complainant without paying for service.

It was further stated that families of railroad employees and their friends were taking advantage of the situation and securing free service. Upon protesting against the practice, complainant was advised by the Western Union Telegraph Company would discontinue joint service unless the free service was rendered.

Under date of November 20, 1917, the Commission advised complainant that under the Railroad Commission law the Commission had authority to compel the maintenance of connections between two or more telephone and telegraph lines if it was found that the maintenance of the same was for the public good. Complainant was also advised that under section 8 of the Railroad Commission law permitted the exchange of telephone and telegraph service with employees of other companies, but that nothing in the law compelled the granting of such free service. Nothing further being heard from complainant, the case was considered closed.

No. 438—Shortage of Refrigerator Cars in Mason Valley.

On November 16, 1917, a telegram was received from Wm. Graunke Hudson, Nevada, stating that he was unable to secure refrigerator cars to transport two carloads of potatoes. It was further stated that the potatoes would be a total loss unless the cars were placed by November 19, 1917.

This matter was taken up with the Southern Pacific superintendent at Sparks, Nevada, which advised that eight refrigerator cars would go forward to Mason Valley points on the night of November 16. The question was also taken up with the superintendent of the Nevada Copper Belt Railroad at Mason, who advised that cars would be furnished complainant promptly.

Complainant was so advised, and the case closed.

Case No. 439—Refund on Round-Trip Passenger Ticket, Carson City to Reno and Return.

On October 29, 1917, a complaint was received from A. V. Higgins of Carson City, Nevada, against the Virginia and Truckee Railroad. Complainant alleged that he had purchased two week-end round-trip passenger tickets for himself and another party, from Carson City, Nevada, to Reno, Nevada, and return. The tickets were purchased on the basis of one fare for the round trip, or \$1.50 each, and were good for return passage until Monday afternoon. Complainant and party holding second ticket were unable to return to Carson City on Monday and endeavored to secure transportation on the tickets on Tuesday. The conductor refused the tickets and complainant was forced to purchase two one-way tickets, Reno to Carson City, at \$1.50 each. The Commission was requested to secure an adjustment.

Upon investigation the Commission found that the railroad company had properly assessed charges according to the tariffs in effect, but that in cases of this nature parties failing to use the return portion of these tickets on Monday should be accorded the benefit of the third day round-trip fare, which was \$2.25 between Carson City and Reno. This view was expressed to officials of the Virginia and Truckee Railroad, who failed to coincide. As complainant did not care to press the matter, the case was dismissed.

Case No. 440—Application of Weights on Coal Shipments.

On November 17, 1917, the Commission on its own motion, forwarded a formal protest to the Interstate Commerce Commission at Washington, D. C., asking for the suspension of the following provisions which were proposed to be made effective December 1, 1917, on coal trains destined to Tonopah and Goldfield Railroad points:

NOTE—Observing published minimum, the actual weight, as determined on track scale at originating point or first available weighing station, will apply in assessment of freight charges on shipments of coal, carloads. (See Exception 1.)

EXCEPTION 1—Any such shipments may be reweighed on carrier's track scales at or nearest destination upon the request of the shipper or consignee at an extra charge of \$1 per car, provided the order to reweigh is placed in time to avoid extra switching, and the point of origin or first track scale weight will govern if such reweighing does not show shrinkage of more than 2 per cent; but if the shrinkage is more than 2 per cent, freight charges will be assessed on the basis of 102 per cent of the weight resulting from such reweighing and no charge made for reweighing.

If there is evidence of shortage of coal from car before same is set for unloading, or if obvious error exists in the billed weight, it is the duty of the agent to make notation on way-bill to that effect and reweigh such car without assessing charge for reweighing.

Under existing conditions at the time protest was made, an adjustment in the weight was made by carriers if upon reweighing it was shown that there was a shrinkage of more than 1 per cent. The C

sion believed that the 1 per cent provision was much more equitable than the proposed 2 per cent rule and therefore filed its protest. After a conference with a representative of the Cremer and Erikson Company of Goldfield, Nevada, and the traffic manager of the Tonopah and Goldfield Railroad Company, the Commission decided to withdraw its formal protest, as assurance was given by the traffic manager of the Tonopah and Goldfield Railroad Company, that he would use his best efforts to have the 1 per cent rule reestablished in southern Nevada territory within one month. The Commission's protest was withdrawn November 28, 1917.

This matter was taken up by the Tonopah and Goldfield Railroad Company with the Pacific Freight Tariff Bureau with a view to securing the adjustment promised, but a majority of the members of that bureau were opposed to any modification of the 2 per cent rule and therefore refused to reestablish the old provision.

At the time of closing this report the Pacific Coast District Freight Committee of the United States Railroad Administration has under consideration the adoption of a rule providing for the reweighing of coal or near destination and readjusting freight charges in cases where reweighing discloses a difference of over 500 pounds from the rated weight. The Commission considers that this is a much fairer rule than either the 1 or 2 per cent provisions, and believes that the same should be made applicable on all coal traffic moving from Utah and coming points to Nevada points.

No. 441—Refusal of Railroad Company to Receive Nonperishable Freight at Reno.

On December 6, 1917, a complaint was received from the Riverside Lumber Company against the Southern Pacific Company. Complainant alleged that it was having considerable trouble in having the defendant company accept nonperishable freight, such as grain, except on certain days in the week. Complainant further stated that it was not asking the defendant company to ship the freight on the same day as it was delivered to the freight sheds at Reno, but asked that the Commission require the company to accept the freight on any day during its regular receiving hours.

This question was taken up with the assistant general freight agent of the Southern Pacific Company at Reno, who made a prompt adjustment by issuing the necessary instructions requiring the acceptance of nonperishable freight on all days during regular receiving hours.

The case was therefore closed.

No. 442—Petition for Installation of Government Wireless Plant at Tonopah.

On December 14, 1917, the Commission received a letter from its Chief Engineer who was in Tonopah, Nevada, stating that the people of that town were endeavoring to have the United States Government install a radio plant at Tonopah, and had requested the Commission to use its influence in securing such service.

This matter was taken up with Chief Commissioner Bartine who was in Washington, D. C., at the time, with the request that he and Commissioner Shaughnessy, who was also in Washington, investigate the question and see what could be done.

Under date of February 1, 1918, information was received to the

effect that all radio plants in the United States had been either taken over by the Government or closed, and that the construction of new radio plants was not permitted.

The case was therefore dismissed.

Case No. 443—Advance in Express Rates.

On November 25, 1917, a letter was received signed by the president of The American Express Company, The Southern Express Company and Wells Fargo & Co., transmitting a copy of the petition of the companies to the Interstate Commerce Commission asking for an advance of 10 per cent in all express rates.

As this was a matter entirely within the jurisdiction of the Interstate Commerce Commission, calling for no direct action by this Commission, the letter and copy of the petition were simply acknowledged and no formal action taken.

Case No. 444—Charges Assessed on Shipment of Second-Hand Lumber and Corrugated Iron, Derby to Lakeview.

On January 5, 1918, a complaint was received from I. L. Winters of Carson City, Nevada, against the Southern Pacific Company and Virginia and Truckee Railway. Complainant alleged that he had received a shipment of second-hand lumber and corrugated iron from Derby, Nevada, billed to Lakeview, Nevada, upon which charges had been assessed amounting to \$107.07, the shipment weighing 40,850 pounds. Complainant further alleged that these charges were excessive and asked the Commission to secure an adjustment.

Upon investigation it was found that the lumber weighed 35,800 pounds which had been rated at 23 cents per hundred pounds, and the corrugated iron weighed 5,000 pounds and had been rated at 43 cents per hundredweight. These rates had been correctly assessed according to the tariffs on file with the Commission and were class rates, namely class B on the lumber and class 4 on the corrugated iron. No through commodity rate had been established on these commodities for the reason that Derby was not a lumber-producing point and there was no movement of either commodity from that point.

The question was taken up with officials of the defendant company with the suggestion that a lower through rate be established to cover the movement of this particular shipment of second-hand materials. Under date of February 21, 1918, the carriers advised that they were unwilling to establish lower rates. Further correspondence was had regarding this matter, but, as the railroads continued to maintain their position that no refund should be made, the case was dismissed July 6, 1918, as the Commission had no authority under the law to force a refund in a case where the legal rates had been assessed.

Case No. 445—Baggage Lost in Transit.

On January 1, 1918, a complaint was received from Mrs. V. Hageman of Miami, Oklahoma, against Wells Fargo & Co. Express. Complainant alleged that she had a trunk in storage at the company's office at Wabuska, Nevada, since February, 1917. It was further alleged that the company had been requested to deliver the trunk to the Southern Pacific Company for shipment to Miami, Oklahoma, but that several letters had been received from the defendant company stating that the trunk could not be located. The Commission was requested to assist in locating complainant's property.

This matter was taken up with officials of Wells Fargo & Co., who advised, under date of March 25, 1918, that the trunk had been located in Luning, Nevada. It appears that the trunk had been originally shipped from Luning to Wabuska, Nevada, in the name of Miss Frankie Hunt, but owing to the fact that no claimant appeared for the same it was returned to Luning, where it was held. The entire trouble appeared to be caused by the confusion in names. The company also advised that there was a refund of \$16.60 due Mrs. Hageman, which could be returned.

Complainant was notified of the result of its investigation, and the case was closed.

Case No. 446—Automobile Service between Reno, Nevada, and Westwood, Cal.

On January 17, 1918, a complaint was received from E. A. Maaske, owner of the Reno-Doyle-Susanville-Westwood stage line of Reno, Nevada, against R. G. Brooks, of Reno, Nevada. Complainant alleged that R. G. Brooks, who represented the Red River Lumber Company of Westwood, Cal., was operating an automobile service between Reno and Westwood without filing a schedule of rates with the Commission and that he was conducting an unfair method of competition against complainant in the matter of transporting employees of the Red River Lumber Company between Reno and Westwood.

Upon investigation it developed that the defendant was not operating an automobile stage line between Reno and Westwood, but represented the Red River Lumber Company as an employment agent. The whole controversy appeared to be personal between the two parties to the proceeding, involving questions over which the Commission had no jurisdiction whatever. The case was therefore dismissed.

Case No. 447—Flour and Cereal Rates from Reno to Eastern Nevada Points on Western Pacific Railroad.

On February 8, 1918, a complaint was received from the Riverside Mill Company of Reno, Nevada, against the Western Pacific Railroad Company. Complainant alleged that rates on flour and cereals in carload lots from Reno to Carlin, Elko, Halleck, Deeth, Starr, and Wells, Nevada, on defendant company's line of railroad ranged from 40¼ to ½ cents per hundred pounds as compared with a rate of 40 cents per hundredweight from San Francisco, Cal., to the same points. The Commission was requested to secure the establishment of rates not exceeding 35 cents per hundred pounds from Reno to the points named. Upon investigation it was found that Southern Pacific Company rates on flour and cereals in carload lots from Reno to Carlin, Wells, etc., were 40 cents per hundredweight. A letter was addressed to officials of the defendant company transmitting a copy of the complaint in this proceeding and advising that an adjustment be made in the rates complained of.

Under date of April 4, 1918, the company addressed a letter to the Commission stating that it was agreeable to establishing rates of 40 cents per hundredweight on flour and cereals in carload lots from Reno to the points named. These rates were published in Supplement No. 2 of Western Pacific Railroad Company's Tariff 36-D, effective May 20, 1918. As this adjustment was entirely satisfactory to complainant, the case was closed.

Case No. 448—Rates on Plaster, Carloads, Mound House to Elko, via Reno.

On February 17, 1918, a complaint was received from the Pacific Portland Cement Company, Consolidated, of San Francisco, California, against the Virginia and Truckee Railway and Southern Pacific Company. Complainant alleged that on October 26, 1917, a carload of plaster had been shipped from its plant at Mound House, Nevada, to Elko, Nevada, and that through error of complainant's shipping department had been routed via the Virginia and Truckee Railway to Reno, and thence Southern Pacific Co. to destination instead of having been routed via the last-named company through Hazen to destination. Consequently the carriers applied a rate of \$5 per ton, made up of 75 cents per ton Mound House to Reno, plus \$4.25 per ton, Reno to Elko, instead of a through rate of \$3.50 per ton which applied via Hazen. Complainant requested the Commission to secure the protection of a \$3.50 per ton rate, claiming that such rate was fully remunerative for the service rendered via Reno.

The Commission found that the rate assessed was correct according to the tariffs legally on file, but submitted the complaint to the traffic departments of the two defendant companies for investigation with the request that they advise whether an adjustment would be made in line with the complainant's request.

Under date of May 17, 1918, the Commission was advised that the carriers could see no reason for making refund in this particular case and as the Commission had no power to force a refund under the law even though it might be found that refund should be made after formal investigation, complainant was advised of the position of the carriers, and the case was dismissed.

Case No. 449—Increased Rates on Ore on Nevada Short Line Railroad.

On February 18, 1918, a telegraphic complaint was received from the Nenzel Crown Point Mining Company of San Francisco, California, against the Nevada Short Line Railway Company. Complainant alleged that the defendant company was about to increase its rate on ore in carload lots from Rochester to Nenzel, Nevada, 50 cents per ton and therefore desired to make protest against the increase as the same would be prohibitive for the grade of ore shipped by complainant.

Upon checking up the tariffs of the Nevada Short Line Railway, it was found that the increased rate complained of had gone into effect on the same date that complaint was made and that, therefore, the Commission had no power to suspend the same pending an investigation.

Complainant was advised by telegraph that the rates could not be suspended, but that upon receipt of a formal complaint an investigation would be immediately started. It was suggested that in the meantime complainant submit data regarding the class of ore being shipped and the effect of the increased rate upon this traffic.

No reply being received to this telegram, and no complaint being filed by complainant within thirty days, the case was dismissed.

Case No. 450—Shortage of Refrigerator Cars in Mason Valley.

On February 21, 1918, a complaint was received from Romeo Rossetti of Yerington, Nevada, against the Nevada Copper Belt Railroad Company and Southern Pacific Company. Complainant alleged that there were approximately 300 cars of potatoes to be shipped out

Mason Valley to various markets within a short time, and that at the present time orders had been placed for forty refrigerator cars, the railroad company being unable to furnish this equipment. It was further alleged that shippers were anxious to move these potatoes, as they were liable to spoil and there was a steadily declining market on the commodity. The Commission was requested to use every effort to relieve the situation.

A similar complaint was received from A. Maionchi of Yerington, Nevada, on February 22, 1918, and the two complaints were considered under this case number.

This matter was taken up by telegraph with officials of the Southern Pacific Company, who advised that the situation was caused by the conditions existing in the middle West where all available refrigerator cars were required to save food products. It was further stated that everything possible would be done to relieve the Mason Valley situation at the earliest practicable date.

Under date of March 19, 1918, the Commission was advised that ten refrigerator cars had been delivered to the Nevada Copper Belt Railroad Company at Wabuska, with twenty-five more to follow the same month. After this date little, if any, trouble was experienced by shippers in securing equipment.

In connection with this case a letter was received from the general manager of the Southern Pacific Company calling attention to the fact that a certain potato shipper of Churchill, Nevada, had held a refrigerator car for loading for a period of five days, and requested the Commission to impress upon shippers and consignees the necessity of loading and unloading equipment promptly.

The shipper complained of was notified of the incident and requested to cooperate with the carriers by promptly releasing equipment.

Case No. 451—Grain Rates from Nevada-California-Oregon Railway Points to Reno.

On February 27, 1918, a complaint was received from the Riverside Mill Company against the Nevada-California-Oregon Railway Company and Western Pacific Railroad Company. Complainant alleged that the current rate on grain from Lakeview, Cal., to Reno, Nevada, was 25 cents per hundredweight, while the rate to San Francisco, Cal., from Lakeview was only 30 cents per hundredweight. It was also alleged that the rate from Davis Creek to Reno was 20 cents per hundredweight and from Alturas 18 cents. The Commission was requested to secure the establishment of a blanket rate from the points of origin named Reno of 18 cents per hundred pounds.

This matter was taken up informally with the defendant railroad companies with a view to securing an adjustment in line with complainant's request.

This case is still pending, now being under consideration by officials of the United States Railroad Administration, who have advised that a decision will be reached at the earliest practicable date.

Case No. 452—Abandonment of Telephone Toll Stations at Imlay and Oreana.

On February 28, 1918, a petition was received from the Bell Telephone Company of Nevada, requesting authority to discontinue its toll stations at Imlay and Oreana, Nevada. It was stated that arrangements were being made to provide the United States Government with

a circuit through the State of Nevada, the same to form a portion of a transcontinental circuit requested by the Federal authorities. It was further stated that the discontinuance of this service at Imlay and Oreana would not deprive the communities of telephone service, as Imlay was served by the Utah, Nevada and Idaho Telephone Company. and Oreana by the Golconda Telephone and Power Company.

On March 2, 1918, the following resolution was adopted by the Commission, a copy of the same being forwarded to petitioner in this proceeding:

Resolved, That the Bell Telephone Company of Nevada be authorized to discontinue its toll stations at Imlay and Oreana, Nevada, during the period of the war in order to permit that company to cooperate to the fullest extent possible with the United States Government in establishing a through toll line in Nevada.

The case was therefore closed.

Case No. 453—Alleged Overcharge on Shipment of Ore, Beowawe, Nevada, to Kennett, Cal.

On March 13, 1918, a complaint was received from A. E. Raleigh of Beowawe, Nevada, against the Western Pacific Railroad Company and Southern Pacific Company. Complainant alleged that a shipment of ore valued at \$28.88 per ton, had been shipped by him from Beowawe, Nevada, to Kennett, Cal., via the Western Pacific Railroad Company and Southern Pacific Company, it being understood that the same rating applied via that route as applied locally via the Southern Pacific Company. It was further alleged that freight charges had been assessed on the basis of \$8 per ton, while if the shipment had moved locally via the Southern Pacific Company the charges would have been based on a rate of \$4.55 per ton. Complainant contended that the charges as assessed were unreasonable, and requested the protection of the \$4.55 per ton rate on this particular shipment.

Under date of March 26, 1918, the Commission advised complainant that it was of the opinion that there was little chance of redress in this case, for the reason that the Southern Pacific Company had named a rate of \$4.55 per ton on ore for the haul, Beowawe to Kennett, over its own line, and naturally, as a business proposition, would not join in a similar rate with the Western Pacific Railroad Company when it would only receive a very small portion of the revenue, giving the bulk of the same to its competitor. Complainant was also advised that the Commission had no direct jurisdiction over interstate rates of this nature, and therefore could do nothing except in an indirect way, but did not desire to be understood as going on record as saying that the \$8 per ton rate was reasonable for the service rendered.

Complainant was advised to file a formal complaint with the Interstate Commerce Commission, asking for the establishment of a reasonable rate from Beowawe, Nevada, to Kennett, Cal., via the Western Pacific Railroad Company and Southern Pacific Company, if it was felt that a rating should be established via that route. The case was dismissed.

Case No. 454—Violation of Full-Crew Law by Western Pacific Railroad Company.

On March 16, 1918, a complaint was received from B. F. Rosa, secretary of Lodge No. 313, Brotherhood of Railroad Trainmen, against the

Western Pacific Railroad Company. Complainant alleged that the defendant company was operating a self-propelled car known as a "Jumbo" in the vicinity of Palisade, Nevada, without an engine or train crew. It was further alleged that the car was handling several other cars, and that in operating the same without an engine or train crew the defendant company was violating the full-crew law of the State.

Under date of March 19, 1918, complainant was advised that since the operation of the railroads of the country had been taken over by the Government, it would appear that the proper mode of procedure in matters connected with operation would be to lay them before the Director-General of Railroads.

The case was dismissed.

Case No. 455—Telephone Service at Beatty and Rhyolite.

On March 26, 1918, a complaint was received from the Sunset Mining and Development Company, and three other residents of Beatty and Rhyolite, Nevada, against the Bullfrog District Telephone Company of Beatty. Complainants alleged that the defendant company was presumed to render telephone service in the towns of Beatty and Rhyolite, Nevada, between the hours of 8 a. m. and 6 p. m. each day, but that it often occurred that it was impossible to secure a response from the operator until 9 or 10 o'clock in the morning. It was further alleged that during the day it often took from fifteen minutes to an hour to get any service. The Commission was requested to require the telephone company to give adequate service.

This matter was taken up with the defendant company, but it required the writing of several letters before a response was received. In reply it was stated that there was only one of the complainants left in the community, and that the telephone line was being operated for the benefit of four subscribers. The company was therefore considering going out of business on October 1, 1918, but would endeavor to render the best service possible as long as operations were continued.

With further reference to this matter, see Case No. 481.

Case No. 456—Claims on Ore Shipments Against Eureka Nevada Railway.

On April 6, 1918, a complaint was received from C. Van Fleet of Elko, Nevada, written on behalf of J. M. Kellogg, of Lee Canyon, Nevada, against the Eureka Nevada Railway Company. Complainant alleged that Mr. Kellogg had shipped forty-one cars of ore from Evans Siding on the Eureka Nevada Railway, such shipments being consigned to Utah smelters. It was further alleged that the defendant railroad company owed the shipper the sum of \$122.82 on account of the adjustment of ore valuations according to smelter returns, but that the defendant company refused to allow claims covering these shipments for the reason that the same were not filed within forty-five days after shipments had moved. The Commission was requested to secure an adjustment.

Upon investigation it was found that the tariff of the Eureka Nevada Railway Company covering shipments of ore carried the following provision:

No refund will be made to consignor, consignee, assigns or connecting carriers who may undertake to correct charges on the rates applied under item 78 of this tariff unless certificate of valuation upon which claim for refund is based has been filed with an agent

or the auditor of the Eureka Nevada Railway at Palisade, Nevada, within forty-five days from the last day of the month in which shipment was made, and unless so filed the rates indicated in item 30 herein will be assessed.

This matter was taken up with the general manager of the defendant company urging an early adjustment of the claims, stating that it was the opinion of the Commission that in any case where overcharges had been made by a carrier owing to misapplication of rates, shipper was entitled to refund regardless of whether errors are discovered within one day or five years after the shipment had been forwarded and received.

As the shipments under consideration were interstate in character, a letter was addressed to the Interstate Commerce Commission under date of April 9, 1918, asking for an opinion as to the legality of the rule set forth above.

On April 20, 1918, the Interstate Commerce Commission replied, declining to rule upon the legality of the provision referred to except after formal hearing and investigation.

Complainant was notified of the Interstate Commerce Commission's attitude, and the statement was made that while the Commission could not, through formal procedure, secure a ruling as to the reasonableness of the provision relating to the adjustment of ore rates, it could not refuse refund on the shipments which had moved during 1917. In the Commission's opinion the question of refund would have to be carried to the court of competent jurisdiction. The Commission awaited further instructions as to carrying this matter before the Interstate Commerce Commission, but hearing nothing from complainant within thirty days, the case was dismissed.

Case No. 457—Lost Baggage and Storage Charges on Same.

On April 6, 1918, a complaint was received from Mrs. S. O. Dyke of Wellington, Nevada, against the Southern Pacific Company. Complainant alleged that she had checked a trunk and a suit-case from Springfield, Ohio, to Hazen, Nevada, and had rechecked the two pieces of baggage from Hazen to Hudson, Nevada. It was further alleged that the trunk had reached Hudson, but that the suit-case had never been forwarded and was being held at Hazen with c. o. d. charges amounting to \$4.10. The Commission was requested to secure the release of the baggage and a cancelation of the charges.

On April 9, 1918, this question was taken up with the general baggage agent of the Southern Pacific Company at San Francisco, California, who, under date of April 11, 1918, advised that the baggage had been ordered forwarded to Hudson, and charges canceled.

Complainant was so notified and the case was closed.

Case No. 458—Shipment of Potatoes from Mason to Reno.

On April 18, 1918, a complaint was received from Emilio Dinn of Mason, Nevada, against the Nevada Copper Belt Railroad Company and the Southern Pacific Company. Complainant alleged that he had purchased and ordered shipped thirteen tons of seed potatoes to be forwarded from Mason to Reno, Nevada, to be consigned to A. Parson at the latter point. It was further alleged that the railroad company had declined to accept the shipment, owing to the fact that complainant

was not shipping a sufficient quantity of potatoes to make a maximum carload as required by the United States Railroad Administration. The Commission was requested to secure the shipment of the potatoes at the earliest practicable date in order to prevent their loss.

This matter was taken up with the assistant general freight and passenger agent of the Southern Pacific Company, who advised under date of April 22, 1918, that arrangements had been made whereby the potatoes would be transported from Mason to Reno by loading the car to capacity with less-than-carload freight after loading of the potatoes had been completed.

As this adjusted the case, the same was closed.

Case No. 459—Weights Applied on Two Shipments of Potatoes, Hudson, Nevada, to Sacramento, Cal.

On April 27, 1918, a complaint was received from William Graunke of Gardnerville, Nevada, against the Nevada Copper Belt Railroad Company and Southern Pacific Company. Complainant alleged overcharges on two shipments of potatoes which moved from Hudson, Nevada, to Sacramento, Cal., during November, 1917.

The two shipments were consigned to different parties in Sacramento, and it appears that each shipment was covered by two freight bills with a minimum weight of 30,000 pounds on each, making a gross minimum of 60,000 pounds for each shipment. Cars were loaded to full visible space capacity and only actually contained about 55,000 pounds each, although charges were assessed on the basis of 60,000 pounds on each car. Shipper requested the application of actual weights and requested the Commission's cooperation in securing the same.

This matter was taken up with the officials of the defendant companies, and under date of June 8, 1918, the Commission was advised that investigation developed the fact that four bills of lading had been issued to cover the two cars in order to enable shipper to load the same to capacity within the free time. This allowed shipper to hold the cars four days without paying demurrage. Therefore for each bill of lading issued a minimum loading of 30,000 pounds was required, or, in this case, 60,000 pounds per car.

The Commission considered that this method of allowing the issuance of two bills of lading on one car in order to enable shippers to hold equipment four days instead of two without payment of demurrage was wrong and would defeat the plan of the Railroad Administration in securing the prompt release of railroad equipment.

Letters were addressed to the defendant railroad companies and also to the Regional Director of the Railroad Administration at Chicago, Ill., outlining the position of the Commission and asking under what authority or rule this method of handling equipment was allowed.

The Southern Pacific Co. advised under date of June 26, 1918, that the minimum carload was the unit (in the case at issue 30,000 pounds), and that the railroad company could not refuse to issue an additional bill of lading on a car when one minimum carload of freight had been placed in the car. No definite ruling has been received from the Regional Director of the Railroad Administration up to the time of closing this report.

This matter was also taken up with the Food Administrator for

Nevada, but it has been impossible to secure an adjustment of the case up to the present time. The proceeding is therefore held on the docket.

Case No. 460—Abandonment of Property of Silver Peak Railroad Company.

On May 10, 1918, a petition was received from various residents of Esmeralda County stating that the owners of the Silver Peak Railroad Company were about to tear up and destroy the track, road-bed, and appurtenances of its railroad from Blair to Blair Junction, Nevada. The Commission was requested to require the defendant railroad company to continue operations as a common carrier and prevent it from removing its property.

On May 14, 1918, a telegram was received from the Chairman and Clerk of the Board of County Commissioners of Esmeralda County asking whether permission had been granted the Silver Peak Railroad Company to remove its property, and stating that rails were already being removed by the company.

The Commission advised that authority had not been granted, and that attorneys for the company had been advised to stay proceedings pending investigation.

On May 16, 1918, an investigation of this matter was held by the Commission before Chief Commissioner Bartine, appearances being made by Messrs. Sam Platt, attorney for the Silver Peak Railroad Company, and B. A. Rives, its secretary. Testimony was taken, and the Commission was assured that no further action would be taken by the company until a decision had been rendered.

On May 25, 1918, the Commission entered the following order:

BEFORE THE RAILROAD COMMISSION OF NEVADA

In the Matter of the Discontinuance of Service, Dismantling and Removing of the Property of the Silver Peak Railroad Company, Located in Esmeralda County, Nevada.

In the above-entitled matter it has been shown to the Commission that for a number of years past said Silver Peak Railroad Company has been operated at a heavy loss; that the great bulk of its business has been derived from the Pittsburg-Silver Peak Gold Mining Company; that said Company has not only discontinued operations, but has dismantled its plant and removed nearly all of the material of which such plant was composed; that hereafter no business from that source will or can inure to the Silver Peak Railroad Company unless some extraordinary and unforeseen developments should take place.

It further appears that apart from the business furnished by the said Pittsburg-Silver Peak Gold Mining Company, the surrounding and adjacent country is capable of furnishing very little freight and very little passenger traffic—nothing anywhere near commensurate with the expense of operating said railroad.

Upon the basis of these facts the Silver Peak Railroad Company has notified this Commission of its purpose to discontinue operations upon its road and remove the rails, ties, equipment, and other material appertaining thereto, and has asked the approval of the Commission to such action. We can see no reason why such petition should not be granted; and it is, therefore,

ORDERED, That the said Silver Peak Railroad Company be allowed to discontinue its service, both freight and passenger, and to remove the rails, ties, equipment, and other material constituting and making up said railroad, and retire from business as a common carrier.

BY ORDER OF THE COMMISSION.

E. H. WALKER, *Secretary.*

Carson City, Nevada, May 25, 1918.

Case No. 461—Loss of Shipment of Oranges, Redlands, Cal., to Reno, Nevada.

On May 13, 1918, a complaint was received from C. A. Howard of Reno, Nevada, against the Southern Pacific Company. Complainant alleged that he had personally shipped a box consisting of oranges and grape-fruit from Redlands, Cal., to Reno, Nev., and that when shipped the fruit was in good condition. It was further alleged that upon receipt of the shipment in Reno, it was found that the same consisted of a different box containing nothing but culls. It appeared that the railroad company declined to make reparation. The Commission was requested to secure an adjustment.

This matter was taken up with the freight-claim agent of the Southern Pacific Company, who, under date of May 23, 1918, advised that an inspection had been made of the fruit upon its arrival in Reno, and that it was found the same consisted of oranges and grape-fruit, wrapped in the original wrappers of the Randolph Marketing Company. The fruit was withered and soft and had the appearance of being windfalls.

The company therefore found that the original shipment had been received by complainant in a bad condition which was no fault of the carrier.

The complainant was informed that the Commission could not force settlement in a case of this kind and was advised that his only recourse was the courts.

Case No. 462—Rates on Graphite from Carson City to Pacific Coast Points.

On May 15, 1918, a complaint was received from W. H. Chedic of Carson City, Nevada, against the Virginia and Truckee Railway and Southern Pacific Company. Complainant alleged that the current rate on graphite in carload lots from Carson City, Nevada, to San Francisco, and Oakland, Cal., of \$5 per ton was unreasonably high as compared with the rate of \$3 per ton in effect on gypsum and plaster from Mound House, Nevada, to the same points. The Commission was requested to secure the establishment of a \$3 per ton rate on graphite.

Under date of May 15, 1918, this matter was taken up with officials of the defendant companies who advised on August 17, 1918, that no reason could be found for reducing the rate complained of.

On August 24, 1918, complainant was notified of the action of the carriers, and, as the case was interstate in character, was advised to file a complaint with the Interstate Commerce Commission if it was still felt that a lower rate should be established.

Case No. 463—Demurrage Regulations at Mound House.

On May 21, 1918, a complaint was received from William Donovan of Silver City, Nevada, against the Virginia and Truckee Railway. Complainant alleged that Silver City was four and one-half miles from Mound House, its shipping point, and that on carload shipments received it took at least seventy-two hours in which to unload the cars and haul the freight to Silver City. It was further alleged that it was practically twenty-four hours before notice was received of the arrival of shipments at Mound House for the reason that the agent would send postal cards to the consignee in Silver City, which were not received until the day after the car arrived.

This matter was taken up with the general freight agent of the Virginia and Truckee Railway, who advised on June 8, 1918, that arrange-

ments would be made whereby telephone notice of the arrival of cars would be sent to consignees at Silver City, in lieu of postal cards as at present. Attention was also called to Item 16 of the company's Special Tariff No. 16, which provided that carload lots may be unloaded and held subject to less-than-carload storage charges. When destined to points five to ten miles from the railroad station a further exemption of five days could be secured in this manner.

Complainant was notified of the action taken by the defendant carrier, and nothing further being heard within thirty days the case was considered satisfactorily adjusted.

Case No. 464—Rates on Gravel, Carloads, Lahontan to Fallon.

On June 7, 1918, a complaint was received from the Department of Highways, State of Nevada, against the Southern Pacific Company. Complainant alleged that the current rate on gravel in carload lots from Lahontan to Fallon, Nevada, was unreasonable and excessive, and requested the Commission to establish, after formal investigation, a rate not to exceed 1 cent per ton per mile, or such other rate as the Commission might find reasonable for the service rendered.

Citation was issued to the defendant company on June 8, 1918, which was given until June 24, 1918, in which to file its answer to the complaint. Further time was granted the company in which to file answer, the same being received on July 5, 1918. With the answer the Southern Pacific Company filed a motion to dismiss the proceeding on the grounds that the Commission lacked jurisdiction on account of the Federal operation of railroads. The motion to dismiss was denied by the Commission on July 9, 1918, and the date of hearing was set for July 22, 1918.

On July 20, 1918, a telegram was received from the United States Railroad Administration at Washington, D. C., requesting the Commission to withhold further action in this proceeding until such time as the questions at issue could be considered by the Administration. The Commission acceded to the request of the Administration and vacated the date of hearing. On July 22, 1918, complainant filed a brief in the case.

Considerable correspondence was carried on regarding this case between the Commission and the officials of the United States Railroad Administration, who, under date of August 30, 1918, offered to establish a rate of 70 cents per ton to cover the movement of gravel in carload lots from Lahontan to Fallon. Complainant was not satisfied with the adjustment offered, and the Administration was so advised, with the further information that complainant considered any rate in excess of 40 cents per ton prohibitive.

On October 4, 1918, complainant requested the Commission to hold this case in abeyance owing to the fact that the Department of Highways of Nevada would be unable to carry on any further road construction work during the war. The case is therefore still on the docket being held in abeyance.

Case. No. 465—Rate on Rice Flour, Carloads, San Francisco to Reno.

On June 15, 1918, a complaint was received from the Riverside Mill Company of Reno, Nevada, against the Southern Pacific Company, alleging that a carload of rice flour had been received from San Francisco, Cal., upon which charges had originally been assessed on

s of 30 cents per hundred pounds. It was further alleged that the charges were later raised to a basis of 50½ cents per hundredweight. The Commission was requested to investigate the matter and advise what justification there was for a higher charge on rice flour than on wheat flour.

The Commission found that rice flour was not entitled to a 30 cent hundredweight rate under the tariffs on file, and that charges had been correctly assessed. However, it was felt that this rating should apply to rice flour, and therefore the matter was taken up with the officials of the defendant company.

Up to the time of closing this report it has been impossible to secure a ruling from the Railroad Administration regarding this question. The case is therefore still pending.

No. 466—Rates on Wheat Flour, Carloads, Reno, Nevada, to Memphis, Tenn.

On June 20, 1918, a complaint was received from the Riverside Mill Company of Reno, Nevada, against the Southern Pacific Company and other transcontinental carriers alleging that the current rate on wheat flour carloads, from Reno, Nevada, to Memphis, Tenn., was 70 cents per hundred pounds, minimum weight 60,000 pounds, as compared with a rate of 55 cents per hundred pounds on the same commodity, minimum weight 80,000 pounds, from Seattle, Wash., to Memphis, Tenn. It was further alleged that the rate from Reno was discriminatory in that it exceeded the rate from Seattle, and the Commission was requested to secure an adjustment if possible.

This question was taken up with the Interstate Commerce Commission and officials of the United States Railroad Administration with a view to securing the establishment of a rate from Reno to Memphis which would not exceed the rate from Seattle to the same point.

Up to the time of closing this report no definite ruling has been secured from the Administration. The case is therefore still pending.

No. 467—Loss of Personal Effects in Transit.

On June 27, 1918, a complaint was received from J. D. Connolly of Arraville, Cal., against P. Guabeouno, who operated an auto stage between Reno, Nevada, and Beelerville, Cal. Complainant alleged the loss of baggage consisting of bedding and personal effects which defendant was supposed to transport from Reno to Beelerville. The Commission was requested to secure reparation for the complainant.

On June 28, 1918, complainant was advised that the Commission had no jurisdiction over damage cases or proceedings of an interstate character, and therefore advised him to bring proceedings for recovery of damages in a court of competent jurisdiction. The case was dismissed.

No. 468—Rate on Fuel Wood, Carloads, Verdi to Reno.

On June 27, 1918, a complaint was received from the Verdi Lumber Company against the Southern Pacific Company. Complainant alleged that, effective June 25, 1918, the United States Railroad Administration had increased rates 25 per cent and that it had established a minimum of \$15 for the transportation of carload freight. It was further alleged that this ruling increased charges on the transportation of fuel wood, Verdi to Reno, Nevada, from approximately \$5 per car to \$15 per car, an increase of 200 per cent. The Commission was requested to secure an adjust-

ment whereby the rate on this tariff would be increased not more than 25 per cent over and above the rate in effect prior to June 25, 1918.

Upon investigation the Commission found that the \$15 per car minimum referred to applied to all commodities except such low-grade material as brick, cement, coal, coke, logs, ore, sand and gravel, and stone. As fuel wood is a low-grade material the Commission felt that the \$15 minimum should not be applied on its transportation, and therefore took the question up with the United States Railroad Administration at Washington, D. C., requesting an adjustment.

The administration accepted the Commission's recommendation and effective November 16, 1918, all tariffs containing rates applicable to fuel wood were amended so as to provide that that commodity should be excepted from the \$15 per car minimum. The case was therefore closed.

Case No. 469—Milling in Transit Privileges on Grain in Nevada.

On July 17, 1918, a complaint was received from the Riverside Company of Nevada against the Southern Pacific Company, asking the Commission's cooperation in securing milling-in-transit privileges on grain in the State of Nevada.

The Commission had some years ago endeavored to secure similar privileges for the grain-milling industry in Nevada, by taking the question up with the Interstate Commerce Commission. That body, however, advised that, although these privileges were in effect in many States, it was against the policy of the Commission to allow the railroads to establish any further practices of that kind. The matter was therefore dropped.

This Commission has long been in favor of the establishment of milling-in-transit rates in Nevada. By the establishment of such rates in the State it would be possible for shippers of grain in eastern Nevada to forward their products to the flour mills at either Lovelock, Elko, Reno, or other points, have the same milled into flour and reship it to California or Nevada markets at the through grain rate from the point of origin of the grain plus a nominal charge per car or per ton for the expense of handling the cars at the flour-milling points. At present time charges are based on the grain rate from point of origin to the flour-milling point, plus the flour rate to the consuming point.

This matter was taken up with Nevada's representatives in Congress, urging that every effort be used in securing the cooperation of the United States Railroad Administration. It was pointed out that the establishment of these milling-in-transit rates would aid materially in the development of the State, and that the very fact that the privilege was granted in some States and not in others was a great discrimination against the States not accorded the privilege.

At the time of closing this report the Commission has received information to the effect that the rates requested are about to be established in Nevada, and also in Utah and Arizona. However, tariffs have not as yet been filed, and the case is still on the docket.

Case No. 470—Vacation Telephone Rates in Reno.

On July 29, 1918, a complaint was received from Miss May Callahan of Reno, Nevada, against the Bell Telephone Company of Nevada. Complainant alleged that she had applied to the telephone company for a vacation rate at one of her houses that had been occupied by a tenant named Evans. It appeared that the party had moved out

the house and complainant was trying to rent it. Complainant further alleged that she had been given to understand that by paying for one month's telephone rental she would be accorded vacation rates until she notified the company to put her on the regular rate. The Commission was requested to adjust the matter.

This question was investigated personally by the Chief Engineer of the Commission, who found that the rules of the company were to the effect that any party desiring vacation rates must pay in advance for the entire period during which they desired those rates to apply, but not longer than four months. The defendant company stated that complainant had been informed of this fact. It was also stated that the vacation rates must apply in the name of the party renting the telephone, while in this case complainant desired the telephone rented in her own name.

After discussing the matter with complainant she decided to withdraw her complaint. The case was therefore dismissed.

Case No. 471—Fencing on Southern and Western Pacific Rights of Way.

On August 31, 1918, a complaint was received from R. F. Raine of Palisade, Nevada, against the Southern Pacific Company and Western Pacific Railroad Company. Complainant alleged that the fencing on the rights of way of the two defendant companies was in such poor condition that large numbers of live stock were getting on the railroad tracks and many being killed by trains. The Commission was requested to require the defendant companies to put their fencing in good condition.

This matter was taken up with the officials of both the Southern Pacific Company and Western Pacific Railroad Company, who advised that instructions had been issued to fence gangs in the vicinity of Palisade to immediately make proper repairs and see that fencing was kept in good condition. Complainant was notified of the action taken, and the case was closed.

Case No. 472—Passenger Train Service at Golconda.

On August 31, 1918, a complaint was received from the Business Men's Association of Winnemucca, Nevada, against the Southern Pacific Company. Complainant alleged that the defendant company refused to stop its passenger train No. 19 at Golconda, Nevada, which caused inconvenience to passengers traveling between the two points.

A copy of the complaint was forwarded to the general manager of the Southern Pacific Company, who replied that the town of Golconda was served by two passenger trains, west-bound, a day, namely, No. 5, leaving at 12:38 p. m. on Southern Pacific Company, and No. 1, leaving at 11:09 p. m. on the Western Pacific Railroad. In view of the very small passenger traffic out of Golconda the company felt that adequate service was being given.

A copy of the defendant company's letter was forwarded to complainant, asking whether further action was desired. Up to the time of closing this report nothing further has been heard from complainant but the case is still being held on the docket for future action if necessary.

Case No. 473—Freight Rates from California Points to Fallon, Nevada.

On September 4, 1918, a complaint was received from the I. H. Kent Company of Fallon, Nevada, against the Southern Pacific Company.

complaining against the method being used in assessing freight charges from California points to Fallon, and asking the Commission to secure an adjustment.

Upon investigation it was found that from California points to Fallon and other points on the Nevada and California Railway Branch of the Southern Pacific Company, the increased rates effective June 25, 1918, were being applied on the combination of rates on Hazen, Nevada. As an example, the first-class rate from San Francisco to Fallon prior to June 25, 1918, was made up of a rate of 97 cents per hundred pounds to Hazen, plus $13\frac{1}{2}$ cents per hundred, Hazen to Fallon, and a through rate of $\$1.10\frac{1}{2}$. Effective June 25, 1918, the 25 per cent advance was applied to the 97-cent rate from San Francisco to Hazen, making the new rate $\$1.21\frac{1}{2}$, while the rate from Hazen to Fallon remained $13\frac{1}{2}$ cents was increased to the minimum first-class rate of 25 cents per hundredweight, thereby making the through rate $\$1.46\frac{1}{2}$, or an increase of nearly 33 per cent instead of 25 per cent.

Had the 25 per cent advance been made on the old through rate of $\$1.10\frac{1}{2}$ the current rate would have been $\$1.38$ instead of $\$1.46\frac{1}{2}$ per hundred pounds.

The Commission took this matter up with the San Francisco District Freight Traffic Committee of the United States Railroad Administration with the recommendation that the rates on freight from California points to all points on the Nevada and California Branch of the Southern Pacific Company be brought to the basis of a 25 per cent increase over the through rates in effect prior to June 25, 1918, instead of assessing the increase on the combination rates above referred to.

Under date of September 28, 1918, the committee advised that the Commission's recommendation had been adopted and that thereafter rates would be assessed on the basis of a 25 per cent increase on the old through rates.

Complainant was notified of the action taken, and the case was closed.

Case No. 474—Proposed Abandonment of Las Vegas and Tonopah Railroad.

On September 9, 1918, the Commission received a copy of a formal notice of the Las Vegas and Tonopah Railroad Company to abandon and tear up its roadway and track between Las Vegas and Beatty, Nevada, together with a copy of a traffic agreement to be adopted by the Bullfrog Goldfield Railroad Company and the Tonopah and Tidewater Railroad Company for handling freight and passenger business between Crucero, Cal., and Beatty and Goldfield, Nevada.

On September 16, 1918, this matter was taken up with the United States Railroad Administration by telegraph, the Commission protesting against abandonment of the property and urging that some method be adopted whereby the operation of the road might be continued.

The position of the Las Vegas and Tonopah Railroad Company was that the railroad had never paid, and that owing to a ruling of the administration refusing to allow the company's shop-work to be done at Las Vegas, Nevada, by the Los Angeles and Salt Lake Railroad Company, and also ordering the routing of through freight from California points to Tonopah and Goldfield, Nevada, via the Tonopah and Tidewater Railroad Company's line, a shorter route, a considerable additional loss of revenue would accrue.

The Commission felt that as the property was to be abandoned on account of rulings of the Railroad Administration, some action should be taken by that body, in order to insure the continued operation of the line. If the property should be abandoned it would mean the elimination of a direct railroad route between northern and southern Nevada, which would also deprive the State, and counties in which the railroad operated, of a large amount of taxable property.

In reply to the Commission's telegram the administration advised that knowing the location of the property it was not believed that the line should be abandoned and therefore the matter had been referred to the Short Line Section of the Administration for complete investigation.

A large amount of telegraph and letter correspondence has been received regarding this case, and at the time of closing this report no definite action has been taken by the United States Railroad Administration looking toward the continued operation of the property or toward having it to be abandoned. However, it has been suggested by the Administration that probably the railroad would be taken over by the Government and operated as a branch of the Los Angeles and Salt Lake Railroad.

No. 475—Consolidation of Passenger Facilities at Reno.

On September 30, 1918, the Southern Pacific Company requested the approval of a plan of the United States Railroad Administration to consolidate Southern Pacific Company and Western Pacific Railroad Company passenger facilities in Reno, Nevada.

The consolidation proposed provided that both Southern Pacific and Western Pacific trains should leave and enter the Southern Pacific depot at Reno, and that all tickets would be sold, and baggage checked, at that depot. Additional ticket agents and baggage men were to be employed at the Southern Pacific depot to take care of the increased traffic.

The Commission considered that the proposed plans would result in a great deal of benefit to the traveling public for the reason that after the consolidation, a union depot would be established with increased passenger facilities which would result in an accommodation for the public. It was also understood that considerable funds would be conserved by the United States Railroad Administration through the operation and maintenance of one depot instead of two.

The consolidation plan was therefore approved.

No. 476—In the Matter of Increased Express Rates.

On October 10, 1918, the following telegram was received from the Special War Committee of the National Association of Railway and Public Utilities Commissioners:

At express hearing before Interstate Commerce Commission, Stice, president of express company, admitted that reduction of 5 per cent in railroad division contracts would produce twelve million dollars to express company, which represents amount it claims it needs. The States present urged that Commission investigate revenues of railroad administration and recommend if possible that Director-General modify contract 5 per cent, thus satisfying demand of needed express revenue without increasing rates or interfering with successful operation or ability of Government to pay return. See my two express bulletins. If you favor this suggestion please wire Commission at once.

Under date of October 14, 1918, a telegram was addressed to War Committee of the National Association of Railway and Utility Commissioners authorizing the committee to represent the Nevada Commission and to make in its behalf whatever concurrence might be necessary to meet the existing war emergency in express rates favoring the 5 per cent reduction in railroad express contracts as a means of solving the problem.

This matter is still under investigation by the Interstate Commerce Commission.

Case No. 477—Rate on Shelled Corn, Carloads, St. Thomas to Las Vegas.

On October 10, 1918, a complaint was received from H. Blanding, Las Vegas, Nevada, against the Los Angeles and Salt Lake Railroad Company. It was alleged that the rate of 35 cents per hundred pounds had been quoted for the transportation of shelled corn in carload from St. Thomas to Las Vegas, Nevada. Complainant contended that this rate was excessive in comparison with rates in effect from Utah to Las Vegas, which did not exceed 41 or 42 cents per hundredweight.

Upon investigation it developed that the correct rate applicable to the commodity for transportation between the points named was 35 cents per hundred pounds instead of 35 cents as quoted. Complainant was so notified, and nothing further being heard it is assumed that the rate quoted was satisfactory. The case was therefore dismissed.

Case No. 478—Train Service to and from Fernley-Lassen Branch Points.

On October 12, 1918, a letter was received from the United States Railroad Administration at San Francisco, Cal., stating that at that time the Southern Pacific Company was operating trains 127 and 128 and 128, between Hazen, Nevada, and Susanville, Cal., also operating trains 29 and 30 between Susanville and Westwood, Cal.

In the interest of economy it was proposed to withdraw all of the trains and establish a daily passenger run between Reno, Nevada, and Westwood, Cal., operating over Western Pacific rails between Reno and Flanigan, Nevada. It was further stated that this would give a direct passenger-train service between Reno and Westwood, and intermediate points. The Commission was requested to approve the proposed adjustment.

On October 19, 1918, a telegram was forwarded to the Railroad Administration approving the proposed plan, provided suitable passenger-train service was established to take care of traffic on the Fernley-Lassen Branch between Flanigan, Pyramid, and Fernley, Nevada.

At a later date a personal conference was held between members of the Commission and W. R. Scott, Federal Manager of the Government railroads operating on the Pacific Coast. It was agreed that mixed train service should be established between Flanigan, Pyramid, and Fernley which would take care of the traffic satisfactorily.

The case was therefore closed.

Case No. 479—Rates on Grain, Carloads, Wabuska, to Reno, Nevada.

On October 14, 1918, a complaint was received from William Graunke of Gardnerville, Nevada, against the Nevada Copper and Iron Railroad Company and Southern Pacific Company. Complainant alleged that a mixed carload of grain, consisting of wheat, barley, and

oats, had been forwarded by him from Hudson, Nevada, to Reno, Nevada, under date of October 9, 1918. It was further alleged that the mixed carload of grain had been shipped for the reason that the Railroad Administration required the loading of cars to full-space capacity, otherwise the grains would have been forwarded in straight carloads. In consequence of shipping a carload of mixed grains complainant was required to pay a rate of 10 cents per hundred pounds higher than the rate applicable to straight carloads of wheat, barley, or oats.

The Commission was requested to secure the protection of a rate of 25 cents per hundred pounds, instead of the rate as charged of 35 cents, if possible to obtain such an adjustment.

This matter was taken up with the San Francisco District Freight Traffic Committee of the United States Railroad Administration at San Francisco, Cal. It was pointed out that the current through rate on mixed carloads of grain was 35 cents per hundredweight, made up of a commodity rate of $12\frac{1}{2}$ cents from Hudson to Wabuska, Nevada, which applied on mixed carloads of grain, and the Class C rate of $22\frac{1}{2}$ cents from Wabuska to Reno, Nevada. Attention was also called to the fact that there was in effect a commodity rate of $12\frac{1}{2}$ cents per hundredweight applicable to straight carloads of wheat, oats, barley, etc., from Wabuska to Reno, but this rate would not apply on mixed shipments of these grains.

The committee was urged to amend the grain rates from Wabuska to Reno so as to allow the $12\frac{1}{2}$ -cent rate to apply on mixed carloads, and that this rate be protected on the shipment under consideration. It appeared to the Commission that this amendment should be made especially in view of the fact that shippers were being forced to load all equipment to capacity, thereby forcing them to load mixed carloads of grain. Under existing conditions shippers were practically being penalized for complying with orders of the Railroad Administration.

Up to the time of closing this report this matter is still under consideration.

Case No. 480—Pullman Accommodations on Train 20, East-Bound, Out of Reno.

On August 7, 1918, the Commission, in response to a request for information from the United States Railroad Administration, called attention to the fact that Southern Pacific train No. 20, which passed Reno east-bound about midnight each night, was not giving satisfactory service in the matter of Pullman space allotted to the city of Reno.

An actual incident was cited wherein passengers who were unable to take train No. 2 which left Reno, east-bound, at 9 p. m., were waiting for train No. 20. The agent at Reno was unable to give them any assurance of Pullman accommodations on the train and stated that in all probability no reservations could be secured as the Pullman space was generally all taken by the time the train reached Reno. On the particular night referred to there were about ten passengers who intended to take train No. 20, among whom were two women with three children.

Upon the arrival of the train all the passengers took passage, taking their chances of securing Pullman accommodations. The Pullman conductor was able to give every one a berth and it was found that there were several berths still vacant after space had been allotted to the Reno passengers.

The Commission considered that this was very poor service, and if no definite space were allotted to the city of Reno notice should at least be given the Reno agency as to the space that would be available upon the arrival of the train at that point.

On October 12, 1918, the assistant general freight and passenger agent of the Southern Pacific Company at Reno, called on the members of the Commission for the purpose of discussing this matter and agreed to see that instructions were issued to the Pullman conductor of train 20 to telegraph from Colfax, Cal., each night, notifying the Reno agency of the space available. The Commission considered that a satisfactory adjustment of the question as to a specific amount of space was provided for Reno passengers on train No. 2, upon which many people traveled.

The case was therefore closed.

Case No. 481—Discontinuance of Service of the Bullfrog District Telephone Company.

On October 7, 1918, notice was received from the Bullfrog District Telephone Company that it was forced to discontinue telephone service in Beatty and Rhyolite, as there were only two or three subscribers left who still took service. It appeared that the only interested party was E. E. Palmer of Beatty, who operated a general merchandise store and who was being urged to take over the line.

Under date of October 7, 1918, a telegram was sent to the company stating that if it was impossible for it to secure the cooperation of E. E. Palmer, it would be justified in discontinuing service on account of no small business available in the district.

It is understood that satisfactory arrangements were made with E. E. Palmer, who took over the operation of the line.

The case was therefore closed.

Case No. 482—Shortage of Stock Cars at Hudson.

On October 18, 1918, a complaint was received by telephone from W. Simpson of Wellington, Nevada, against the Nevada Copper and Iron Railroad Company and the Southern Pacific Company. Complainant alleged that on October 14, 1918, orders had been placed for three stock cars to be placed for loading at Hudson, Nevada, on October 18, 1918. Up to the date of complaint the cars had not been delivered, and complainant was holding stock at Hudson for shipment. The Commission was requested to secure equipment at the earliest possible moment.

This matter was taken up by long-distance phone with the chief dispatcher of the Southern Pacific Company at Sparks, Nevada, who advised that through oversight the three cars had not been forwarded to Hudson, but assured the Commission that they would be placed for loading by the 19th.

Complainant was notified of the action taken, and the case was closed.

Case No. 483—Weighing Charges at Las Vegas.

On November 4, 1918, a complaint was received from H. Bland of Las Vegas, Nevada, against the Los Angeles and Salt Lake Railroad Company. Complainant alleged that in ordering the reweighing of carload freight he had been in the habit of paying \$5 per car, but that

during the past three months charges of \$7 per car had been assessed. The Commission was requested to investigate the matter and advise as to the authority for the \$7 per car charge.

As the Commission was unable to check either the \$5 or the \$7 charge, the matter was taken up with complainant for the purpose of ascertaining further particulars with reference to the movement of these cars in the Las Vegas yard.

The case is still pending.

Case No. 484—Rates on Farm Products Between Virginia and Truckee Railway Points.

On November 9, 1918, a complaint was received from George Peckham against the Virginia and Truckee Railway, alleging unreasonably high freight rates on hay, grain, potatoes, and other farm products from Huffakers and other points in the vicinity of Huffakers, Nevada, to Reno, Nevada. The Commission was requested to secure an equitable adjustment of these rates.

This matter has been taken up with the management of the Virginia and Truckee Railway, which has the same under investigation.

The case is still pending.

Case No. 485—In the Matter of Uniform Class Rates in Intermountain Territory.

On November 9, 1918, the United States Railroad Administration submitted to the Commission for consideration a tentative scale of uniform class rates to be adopted and put into effect on all Government-operated railroads in the intermountain territory. It was stated that the scale submitted was merely tentative and subject to modification. The Commission was asked to give its opinion concerning this matter.

It appears that similar scales of class rates are to be adopted in other zones in order to bring about the establishment of uniform class-rate schedules in the various territories of the United States.

The Intermountain scale is known as the 120 per cent scale, the Pacific Coast and Southern Territory scales are known as the 100 per cent scales, while a 75 per cent scale is proposed for the Middle Western Territory.

The Commission has gone on record as being opposed to the 120 per cent scale for this State, and believes that anything in excess of the 100 per cent schedule will be unreasonable.

Within a short time a meeting of representatives of the Intermountain Territory is to be held in Salt Lake City, Utah, for the purpose of considering this question.

The case is still pending.

Case No. 486—Rates on Waste Paper, Carloads, Carson City, Nevada, to Los Angeles, Cal.

On November 14, 1918, the Commission addressed a letter to the officials of the Virginia and Truckee Railway Company and Southern Pacific Company, requesting the establishment of a rate of \$7 per ton on waste paper, baled, in carload lots from Carson City, Nevada, to Los Angeles, Cal.

This action was taken on behalf of the Board of Capitol Commissioners of the State of Nevada, who stated to the Commission that as a war economy measure all waste paper had been saved and baled, and that at the present time there was an accumulation of some fifteen or twenty

tons ready for shipment. The Board had been quoted a price of \$ per ton on the paper, f. o. b. Los Angeles, Cal., but as the prevailing freight rate from Carson City to that point exceeded \$12 per ton, was found necessary to obtain a rate which would at least allow something to the board for the cost of handling the material. Therefore a rate of \$7 per ton was requested.

This case is still pending.

This report covers all cases handled by the Commission up to and including November 26, 1918, during the two-year period for which the report is made.

INVESTIGATION AND SUSPENSION DOCKETS

I. & S. Docket No. 7—Cancellation of Freight Rates on Eureka Nevada Railway

On April 28, 1917, the Commission entered upon an investigation concerning the propriety of the Eureka Nevada Railway Company canceling all freight rates, which it proposed to do, effective May 1, 1917. The supplement to the tariff providing for this cancellation was suspended for a period of sixty days.

This case never came to a hearing for the reason that the Eureka Nevada Railway Company reestablished all of its intrastate freight rates and has maintained the same since May 3, 1917.

I. & S. Docket Nos. 8, 9, 10, 11, 12, 13, 14, and 15—Fifteen-Per-Cent Advance Rate Cases.

Effective July 1, 1917, the following railroad companies operating in Nevada, proposed to increase their freight rates 15 per cent on Nevada intrastate business:

The Southern Pacific Company, Tonopah and Goldfield Railroad Company, Western Pacific Railroad Company, Nevada Northern Railway Company, Los Angeles and Salt Lake Railroad Company, Virginia and Truckee Railway, Bullfrog Goldfield Railroad Company, Las Vegas and Tonopah Railroad Company, Tonopah and Tidewater Railroad Company, Nevada Copper Belt Railroad Company, and the Nevada-California-Oregon Railway Company.

The Pacific Freight Tariff Bureau also filed supplements to freight schedules proposing to increase various joint freight rates 15 per cent.

On June 6, 1918, the Commission entered upon an investigation of these proposed increases and suspended forty-seven supplements to freight schedules filed by the various carriers for a period of sixty days from July 1, 1917.

These cases were set down for hearing to take place in Carson City on July 20, 1917.

On July 11, 1917, the Commission was requested to vacate the date of hearing, as the carriers desired to withdraw all supplements to tariffs proposing a 15 per cent advance in freight rates.

The carriers were therefore allowed to withdraw the supplements to tariffs referred to, the date of hearing was vacated, and the cases were dismissed.

I. & S. Docket No. 16—Increases in Freight Rates on Eureka Nevada Railway

On October 10, 1917, the Commission entered upon an investigation concerning the reasonableness of certain increases in freight rates proposed to be made effective on the Eureka Nevada Railway on October 1, 1917.

15, 1917. The proposed rates were suspended for a period of sixty days.

Under date of October 20, 1917, the Eureka Nevada Railway Company advised that it was not the intention to increase intrastate freight rates, and the tariff was therefore withdrawn in its application to Nevada business.

The case was dismissed.

I. & S. Docket No. 17—Increase in Freight Rates on Pioche Pacific Railroad.

On June 12, 1918, the Pioche Pacific Railroad Company filed a supplement to its local freight tariff making a uniform advance of 10 per cent in the rates, effective July 12, 1918.

A protest was filed by the Uvada Copper Company of Salt Lake City, Utah, requesting that the rates be suspended by the Commission pending an investigation as to their reasonableness.

On June 15, 1918, the Commission entered upon an investigation of the reasonableness of the proposed rates, and suspended them for a period of sixty days.

A hearing was held in this proceeding in Carson City, Nevada, on July 27, 1918. The Commission was unable to complete its investigation within the sixty days and therefore entered an order under date of September 10, 1918, suspending all ore rates for a further period of sixty days, but allowing the 10 per cent advance on other freight rates.

The Commission's opinion and order in this proceeding was entered November 9, 1918, and a copy of the same follows:

BEFORE THE RAILROAD COMMISSION OF NEVADA

INVESTIGATION AND SUSPENSION DOCKET No. 17

In the matter of certain increases in freight rates on the Pioche Pacific Railroad.

OPINION

BY THE COMMISSION:

On June 13, 1918, the Pioche Pacific Railroad Company filed a formal notice with the Commission, reading as follows:

Notice is hereby given that thirty (30) days hence, namely, July 12, 1918, there will become effective the following increase in rates on this railroad:

On all commodities, both inbound and outbound, ten (10) per cent of the rates set forth upon our rate schedule "C" dated May 1, 1915.

A charge for transferring ore from narrow to broad-gage cars of fifteen cents per ton.

On June 15, 1918, a protest was received from the Uvada Copper Company, of Salt Lake City, Utah, objecting to the proposed increases in freight rates on the Pioche Pacific Railroad, and particularly protesting against the 10 per cent advance in ore rates from Jackrabbit to Pioche, Nevada, and the charge of 15 cents per ton to be established for transferring ore from narrow to broad-gage cars at Pioche.

On the basis of this protest, the Commission issued an order on June 15, 1918, suspending the operation of the new rates for a period of sixty days, pending an investigation as to the reasonableness of the proposed increases.

A hearing was held regarding the matters involved in this proceeding on July 27, 1918. Appearance was made on behalf of the Uvada Copper Company by H. W. Prickett, but no formal appearance was made on behalf of the Pioche Pacific Railroad Company. On July 9, 1918, the railroad company filed a statement regarding its financial condition and reasons for increasing freight rates, with the request that such statement be considered in determining the reasonableness of the increases. This statement was duly considered as evidence at the hearing above referred to.

Protestant's entire testimony related to the question of increased rates on ore,

and therefore consideration of proposed rates on other commodities than was practically eliminated from this proceeding.

The Commission was unable to complete its investigation by September 1918, and the proposed rates on ore, including the transfer charge of 15 cents per ton, were further suspended to November 9, 1918. The proposed rates on other commodities were not further suspended, and therefore went into effect September 10, 1918.

The following facts were developed in this investigation:

The Pioche Pacific Railroad Company operates a line of narrow-gauge railroad out of Pioche, Nevada, where it connects with the Los Angeles and Lake Railroad. The railroad consists of two branches, one serving the Amalgamated Pioche Mines and Smelters Corporation mines located on what is known as the Hill Division, a distance of two miles from Pioche, and the other branch serving the Uvada Copper Company mines at Jackrabbit, Nevada, located on what is known as the Jackrabbit Division, a distance of four miles from Pioche.

While the Pioche Pacific Railroad Company and the Amalgamated Pioche Mines and Smelters Corporation are separate corporate organizations, a number of the employees of the railroad company are also employed by the mines company and there is nothing in the record which discloses the manner in which salaries and wages are charged against the two corporations. The Commission is, therefore, unable to determine whether the salaries and wages charged against the railroad company are commensurate with the services rendered by such employees or not.

We find that, according to the annual report of the Pioche Pacific Railroad Company for the year ending December 31, 1917, salaries and wages charged against the company amounted to \$12,952.70, out of a total operating expense of \$15,796.01, or 82 per cent of the total expense. This, on its face, appears extremely high. As a comparison, we find the salaries and wages paid by other narrow-gauge railroads operating in Nevada range from 60 to 74 per cent of operating expenses.

The record further develops the fact that the ore rates on the Hill Division which serves the Amalgamated Pioche Mines and Smelters Corporation, were 75 cents per ton prior to July 1, 1918, with an additional charge of 15 cents per ton for transfer at Pioche. These rates covered ore regardless of value. Effective July 1, 1918, these rates were reduced by the establishment of the following scale:

Tonnage of 15 or less per day.....	75 cents per ton
Over 15 to 40 tons per day.....	60 cents per ton
Over 40 to 75 tons per day.....	55 cents per ton
Over 75 tons per day.....	50 cents per ton
For transferring from narrow- to broad-gage cars....	15 cents per ton

The Pioche Pacific Railroad Company states that the reason for this reduction was on account of the fact that the Amalgamated Pioche Mines and Smelters Corporation had increased its shipments to an average of over 15 tons per day.

The scale of rates in effect on ore from Jackrabbit to Pioche, Nevada, was, according to valuation, and a different scale is in effect during the winter months than that in effect during the summer period. The rates in effect from April to October, inclusive, range from \$1 per ton on ore of \$10 per ton valuation, or less, to \$3 per ton on ore of \$100 per ton valuation, or over. Rates in effect during the months of November to March, inclusive, are 25 cents per ton higher than the summer rates. Under these scales of rates, no transfer charges were assessed at Pioche, Nevada.

The Pioche Pacific Railroad Company proposes to increase the rates named in the preceding paragraph 10 per cent, and add a charge of 15 cents per ton for transfer charges at Pioche.

During the calendar year 1917, the Uvada Copper Company shipped 1,000 tons, or 76 per cent of the total ore originating on the Pioche Pacific Railroad Company. Upon half of this tonnage the winter rates applied, amounting to an average of \$1.50 per ton, while the balance was shipped under summer rates of approximately \$1.25 per ton. The Amalgamated Pioche Mines and Smelters Corporation shipped 24 per cent of the ore tonnage in 1917, or 240 tons, at an average charge of 75 cents per ton, plus a transfer charge of 15 cents per ton.

According to figures submitted for 1918, it is found that on the basis

the six-month period, January 1 to June 30, inclusive, the Uvada Copper Company will increase its tonnage of ore by approximately 1,340 tons over the 1917 tonnage. Figures on increased shipments by the Amalgamated Pioche Mines and Smelters Corporation during the year 1918 have not been submitted, although it is claimed that there has been some increase. It will, therefore, be seen that while both mining companies have increased their tonnage during the year 1918, the rates charged the Amalgamated Pioche Mines and Smelters Corporation have been decreased to a certain degree, while it is proposed to increase charges on ore shipped by the Uvada Copper Company.

In view of the above facts, the Commission feels that it should suspend without prejudice the proposed increased rates on ore from Jackrabbit to Pioche, Nevada, for the reason that it has been impossible to definitely allocate operating expenses with particular reference to salaries and wages to the Pioche Pacific Railroad Company and the Amalgamated Pioche Mines and Smelters Corporation, and for the further reason that although there is an apparent increase in ore tonnage on both the Jackrabbit and Hill Divisions, the rates from Jackrabbit are proposed to be increased while the rates on the Hill Division have been actually decreased.

With respect to the transfer charge of fifteen cents per ton, the Commission is of the opinion that the same should apply on shipments of ore from Jackrabbit in the same manner as such charges are assessed on ore moving from the Hill Division. An order will be entered accordingly.

ORDER

At a general session of the Railroad Commission of Nevada, held at its offices in Carson City, Nevada, November 9, 1918.

INVESTIGATION AND SUSPENSION DOCKET No. 17

IT APPEARING, That on June 15, 1918, the Commission entered upon an investigation concerning the propriety of the increases and the lawfulness of the rates, regulations, charges, and practices stated in a schedule filed by the Pioche Pacific Railroad Company reading as follows:

Notice is hereby given that thirty (30) days hence, namely, July 12, 1918, there will become effective the following increase in rates on this railroad:

On all commodities, both inbound and outbound, ten (10) per cent of the rates set forth upon our rate schedule "C" dated March 1, 1915.

A charge for transferring ore from narrow- to broad-gage cars of fifteen cents per ton.

IT FURTHER APPEARING, That a full investigation of the matters and things involved has been had, and that the Commission, on the date hereof, has made and filed a report containing its findings of facts and conclusions thereon, which said report is hereby referred to and made a part hereof; It is

Ordered: That upon ore in carloads moving from Jackrabbit to Pioche, Nevada, the proposed increases in rates of ten per cent (10%) be denied. It is further

Ordered: That the proposed establishment of a charge of fifteen cents per ton of 2,000 pounds for transferring ore from narrow-gage to broad-gage cars at Pioche, Nevada, be granted. It is further

Ordered: That an amendment or supplement to Pioche Pacific Railroad Company's schedule "C" be filed with the Commission adjusting rates in line with this order, making such amendment or supplement effective on or after November 9, 1918.

BY ORDER OF THE COMMISSION,
E. H. WALKER, *Secretary*.

[SEAL]

All of which is respectfully submitted.

J. F. SHAUGHNESSY,
First Associate Commissioner,
W. H. SIMMONS,
Second Associate Commissioner.

E. H. WALKER, *Secretary.*

APPENDIX

ANNUAL REPORTS

OF THE

Railroads Operating in Nevada

**FOR THE YEARS ENDING DECEMBER 31, 1916, AND
DECEMBER 31, 1917**



THE

THE

THE

THE

CHARACTER OF CARRIER, AND NUMBER OF SHAREHOLDERS

Company	Character of carrier		Operated by		Number of share-holders	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	Operating	Operating	-----	-----	42,245	44,581
Bullfrog Goldfield Railroad	Operating	Operating	-----	-----	46	46
Central Pacific Railway	Not operating	Not operating	Southern Pacific	Southern Pacific	10	10
Central Nevada Railway	Not operating	Not operating	Nevada Tran. Co.	Nevada Tran. Co.	Not shown	7
Eureka Nevada Railway	Operating	Operating	-----	-----	9	9
Las Vegas and Tonopah Railroad	Operating	Operating	-----	-----	14	14
Los Angeles and Salt Lake Railroad	Operating	Operating	-----	-----	23	23
Nevada California Oregon Railway	Operating	Operating	-----	-----	14	14
Nevada Central Railroad	Operating	Operating	-----	-----	Not shown	Not shown
Nevada Copper Belt Railroad	Operating	Operating	-----	-----	10	10
Nevada Northern Railway	Operating	Operating	-----	-----	6	6
Nevada Transportation Company	Operating	Operating	-----	-----	Not shown	Not shown
Pioche Pacific Railroad	Operating	Operating	-----	-----	1	1
Silver Peak Railroad	Operating	Operating	-----	-----	34,346	37,853
Southern Pacific Company	Operating	Operating	-----	-----	61	11
Tonopah and Goldfield Railroad	Operating	Operating	-----	-----	16	16
Tonopah and Tidewater Railroad	Operating	Operating	-----	-----	14	14
Virginia and Truckee Railway	Operating	Operating	-----	-----	-----	-----
The Western Pacific Railroad	Operating	Operating	-----	-----	76,826	82,678
Totals	-----	-----	-----	-----	-----	-----

MILEAGE

Company	Total mileage operated		Nevada mileage operated		Miles of yard track and sidings in Nevada	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	8,648.21	8,629.59	11.60	11.60	9.99	9.19
Bullfrog Goldfield Railroad	86.59	86.59	86.59	86.59	(a)	(b)
Central Pacific Railroad	(a)	(a)	(a)	(a)	(a)	(a)
Eureka Nevada Railroad	(b)	(b)	(b)	(b)	(b)	(b)
Las Vegas and Tonopah Railroad	118.81	118.81	118.81	118.81	6.15	6.15
Los Angeles and Salt Lake Railroad	1,164.20	1,164.47	266.94	266.94	56.49	58.46
Nevada-California-Oregon Railroad	276.11	276.11	27.00	27.00	3.76	4.56
Nevada Central Railroad	98.30	98.30	98.30	98.30	2.00	2.00
Nevada Copper Belt Railroad	41.47	41.47	41.47	41.47	6.54	6.54
Nevada Northern Railroad	166.10	166.06	166.10	166.06	26.85	26.85
Nevada Transportation Company	84.00	84.60	84.00	84.60	3.06	3.06
Pioche Pacific Railroad	16.00	16.00	16.00	16.00		
Silver Peak Railroad	17.50	17.50	17.50	17.50	1.50	1.50
Southern Pacific Company	7,065.14	7,102.90	746.27	746.27	231.58	231.58
Tonopah and Goldfield Railroad	113.41	113.41	113.41	113.41	11.57	11.50
Tonopah and Tidewater Railroad	169.07	169.07	30.96	30.96	3.25	3.25
Virginia and Truckee Railroad	67.48	67.48	67.48	67.48	18.07	17.73
The Western Pacific Railroad	961.43	974.47	427.25	427.25	41.17	41.17
Totals	19,078.82	19,122.82	2,306.53	2,317.22	406.58	423.63

^aCentral Pacific Railway is operated by the Southern Pacific Company.

^bEureka Nevada Railway is operated by the Nevada Transportation Company.

1916 figures are given, none being shown in 1917.

MILEAGE AND CAPITAL STOCK

Company	Nevada mileage— All tracks		Capital stock— Total par value authorized		Capital stock— Total par value outstanding	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	12.59	11.60	\$874,196,500.00	\$874,196,500.00	\$340,751,200.00	\$344,699,500.00
Bullfrog Goldfield Railroad	96.59	96.75	2,000,000.00	2,000,000.00	1,640,000.00	1,640,000.00
Central Pacific Railway	(a)	(a)	84,675,500.00	84,675,500.00	84,675,500.00	84,675,500.00
Eureka Nevada Railway	(b)	(b)	500,000.00	500,000.00	500,000.00	500,000.00
Las Vegas and Tonopah Railroad	124.96	124.96	1,550,000.00	4,000,000.00	1,550,000.00	1,550,000.00
Los Angeles and Salt Lake Railroad	323.43	325.40	25,000,000.00	25,000,000.00	25,000,000.00	25,000,000.00
Nevada-California-Oregon Railway	30.75	31.46	2,200,000.00	2,200,000.00	2,200,000.00	2,200,000.00
Nevada Central Railroad	96.30	96.30	750,000.00	750,000.00	750,000.00	750,000.00
Nevada Copper Belt Railroad	41.47	48.01	1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00
Nevada Northern Railway	189.54	196.90	2,000,000.00	2,000,000.00	2,000,000.00	2,000,000.00
Nevada Transportation Company	87.06	87.65	25,000.00	25,000.00	2,500.00	2,500.00
Pioche Pacific Railroad	16.00	16.00	250,000.00	250,000.00	250,000.00	250,000.00
Southern Pacific Company	19.00	19.00	200,000.00	200,000.00	200,000.00	200,000.00
Tonopah and Goldfield Railroad	977.85	977.85	420,000,000.00	420,000,000.00	272,523,968.64	272,523,968.64
Tonopah and Tidewater Railroad	124.86	125.21	2,150,000.00	2,150,000.00	2,150,000.00	2,150,000.00
Virginia and Truckee Railroad	84.20	84.20	1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00
The Western Pacific Railroad	86.55	86.21	5,000,000.00	5,000,000.00	5,000,000.00	5,000,000.00
Totals	451.73	463.42	76,000,000.00	76,000,000.00	75,000,000.00	75,000,000.00
	2,813.31	2,742.95	\$997,500,000.00	\$1,252,500,000.00	\$516,492,105.64	\$530,440,905.64

^aCentral Pacific Railway is operated by the Southern Pacific Company.

^bEureka Nevada Railway is operated by the Nevada Transportation Company.

FUNDED DEBT

Company	Total par value of funded debt authorized		Total par value of funded debt outstanding		Funded debt—Interest accrued	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$431,568,000.00	\$405,531,500.00	\$297,279,760.60	\$298,019,989.20	\$12,865,780.51	\$11,729,509.08
Builtroff Goldfield Railroad	1,568,000.00	1,568,000.00	233,000.00	188,000.00	14,480.00	12,506.00
Central Pacific Railroad	268,601,897.79	245,401,897.79	196,760,724.79	196,234,232.79	8,419,757.64	8,406,918.98
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	70,000,000.00	70,000,000.00	67,063,000.00	59,022,000.00	2,252,120.00	2,302,120.00
Los Angeles and Salt Lake Railroad	1,500,000.00	2,500,000.00	1,312,000.00	853,000.00	64,008.76	59,439.92
Nevada-California-Oregon Railway	750,000.00	750,000.00	750,000.00	750,000.00	7,500.00	80,000.00
Nevada Central Railroad	1,000,000.00	1,000,000.00	622,000.00	622,000.00	37,820.00	37,820.00
Nevada Copper Belt Railroad	1,000,000.00	1,000,000.00	100,000.00		11,008.06	5,000.00
Nevada Northern Railway						
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	340,369,000.00	358,779,000.00	209,482,110.00	206,635,110.00	8,859,680.78	8,926,768.48
Tonopah and Goldfield Railroad	1,500,000.00	1,500,000.00	200,000.00		18,000.00	5,950.00
Tonopah and Tidewater Railroad	3,650,594.10	3,650,594.10	3,285,344.10	3,285,344.10	163,742.79	160,647.89
Virginia and Truckee Railroad						
The Western Pacific Railroad	20,000,000.00	20,000,000.00	17,085,280.00	20,000,000.00	246,812.67	908,080.89
Totals	\$1,296,758,991.89	\$1,111,880,991.89	\$794,163,197.49	\$775,334,666.09	\$32,490,211.21	\$32,584,210.19

FUNDED DEBT AND INVESTMENT IN ROAD AND EQUIPMENT

Company	Funded debt—Interest paid		Total cost of road to June 30, 1907	Total cost of equipment to June 30, 1907	Investment from July 1, 1907, to June 30, 1914	Investment from June 30, 1914, to December 31, 1916
	1916	1917				
Atchison, Topeka and Santa Fe Railway	\$12,140,674.70	\$11,613,028.56	\$482,629,350.70		\$109,792,464.99	\$14,411,320.53
Bullfrog Goldfield Railroad	10,410.00	9,625.00			3,787,717.06	1,850,395.72
Central Pacific Railroad	8,272,349.41	8,128,341.40	\$215,359,586.19		63,153,989.84	4,041,100.18
Eureka Nevada Railway					479,047.06	5,314.14
Las Vegas and Tonopah Railroad	2,282,120.00	2,282,120.00	1,947,404.61	\$146,556.56	1,027,106.06	1,417,532.99
Los Angeles and Salt Lake Railroad	65,125.00	59,985.00	60,692,700.47	5,006,029.92	10,692,867.75	1,696,647.84
Nevada-California-Oregon Railroad	7,500.00	30,000.00	2,655,638.55	95,518.37	1,353,957.04	145,358.69
Nevada Central Railroad			\$1,500,000.00		4,550.00	145,300.00
Nevada Copper Belt Railroad	38,421.22	28,752.00			1,106,032.27	6,635.47
Nevada Northern Railway	15,383.06	5,000.00	1,480,820.56	168,652.36	1,535,372.42	112,405.19
Nevada Transportation Company					12,032.36	3,964.34
Pioche Pacific Railroad						b4,712.43
Silver Peak Railroad					209,168.71	
Southern Pacific Company	8,722,844.29	8,755,254.66	\$18,290,815.51		69,118,769.17	35,942,920.51
Tonopah and Goldfield Railroad	18,000.00	5,950.00	3,008,235.06	449,118.67	258,850.00	9,631.66
Tonopah and Tidewater Railroad	281,906.54	180,647.89	3,185,763.42	73,987.76	949,439.59	75,767.18
Virginia and Truckee Railway			4,228,447.87	178,415.00	48,022.44	10,232.46
The Western Pacific Railroad	64,683.50	972,298.20	27,104,821.78	1,599,583.56	52,776,931.06	1,611,631.14
Totals	\$31,889,427.72	\$32,070,982.73	\$622,023,694.54	\$7,717,872.20	\$316,306,317.72	\$54,525,149.15

^aIncludes both cost of road and equipment.^bRepresents investment from June 30, 1914, to June 30, 1916.*Italic figures denote credit.*

**TOTAL ROAD AND EQUIPMENT INVESTMENT AND INVESTMENT PER MILE OF ROAD,
AND TOTAL INVESTMENT IN NEVADA**

Company	Grand total investment		Investment per mile of road		Grand total investment in Nevada	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$906,833,136.12	\$615,883,003.03	\$493,561.00	\$493,897.73	\$150,284.09	\$150,284.09
Burlingame and Santa Fe Railway	1,987,321.33	1,846,339.37	21,822.78	21,822.78	1,987,321.33	1,846,339.37
Central Nevada Railway	282,564,966.21	284,720,621.96	122,462.82	123,963.02	84,966,543.06	85,503,831.74
Eureka Nevada Railway	484,861.20	484,861.20	5,725.30	5,725.30	484,861.20	484,861.20
Las Vegas and Tonopah Railroad	1,708,834.24	1,624,118.80	14,535.62	13,609.36	1,708,834.24	1,624,118.80
Los Angeles and Salt Lake Railroad	78,068,240.88	82,600,439.81	76,273.69	79,879.74	(c)	(c)
Nevada-California-Oregon Railway	4,250,472.66	(b)	15,460.08	(b)	4,316.23	(b)
Nevada Central Railroad	1,506,880.00	1,506,880.00	16,139.97	16,139.97	1,506,880.00	1,506,880.00
Nevada Copper Belt Railroad	1,141,967.74	1,147,336.27	16,134.51	17,016.22	1,141,967.74	1,147,336.27
Nevada Northern Railroad	3,287,950.53	3,694,320.49	26,878.89	27,016.22	3,287,950.53	3,583,320.49
Nevada Transportation Company	15,880.49	(b)	20,014.87	21,418.75	15,880.49	(b)
Pioche Pacific Railroad	15,719.49	(b)	118.30	(b)	15,719.49	(b)
Silver Pacific Railroad	\$64,970.62	\$64,698.22	3,719.61	3,692.93	\$64,970.62	\$64,698.22
Southern Pacific Railroad	123,189,505.12	120,852,818.28	83,544.91	84,110.74	123,189,505.12	120,852,818.28
Tonopah and Goldfield Railroad	3,706,531.90	3,714,044.06	36,546.96	36,693.43	3,706,531.90	3,714,044.06
Tonopah and Tidewater Railroad	4,139,433.59	4,152,717.72	24,663.96	24,773.03	4,139,433.59	4,152,717.72
Vinnia and Truckee Railway	4,444,601.65	4,452,954.60	65,985.47	66,989.24	4,444,601.65	4,452,954.60
The Western Pacific Railroad	\$3,092,767.54	\$6,885,845.30	\$8,770.08	\$9,295.01	\$3,092,767.54	\$6,885,845.30
Totals	\$1,200,575,033.61	\$1,213,647,835.58			\$124,760,916.12	\$126,604,864.25

^aInvestment per mile of road owned.

^bNot shown.

^cInvestment since June 30, 1914, only; investment prior to that date not shown.

^dNo property investment at close of year account entire line in State of Nevada sold to Western Pacific Railroad Company.

^eTotal investment figures reduced since previous report account sums charged off for depreciation and retirement of property.

INCOME ACCOUNT

Company	Railway operating revenues		Railway operating expenses		Net revenue or deficit from railway operations	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$121,578,879.47	\$140,978,986.14	\$72,896,804.55	\$88,504,049.77	\$48,682,074.92	\$52,474,936.37
Bullfrog Goldfield Railroad	134,831.15	114,350.06	108,609.98	87,177.51	31,221.22	27,152.56
Central Pacific Railway						
Bureau Nevada Railway	133,065.95	100,102.17	116,617.20	4,486.70	16,448.46	4,486.70
Las Vegas and Tonopah Railroad	11,666,884.78	12,766,723.12	6,813,006.69	83,881.82	4,843,876.19	16,710.36
Nevada-California-Salt Lake Railroad	391,723.26	383,873.48	323,349.92	7,731,223.65	68,376.19	5,085,497.47
Nevada-California-Oregon Railroad	46,815.82	68,146.66	34,379.30	346,290.27	12,436.94	37,683.21
Nevada Central Railroad	2,17,024.08	251,120.82	35,653.37	36,411.72	1,818.44	11,738.44
Nevada Copper Belt Railroad	2,19,116.02	2,512,023.27	355,107.69	1,111,384.14	1,840.71	139,858.48
Nevada Northern Railway	30,273.79	16,863.19	28,107.82	1,067,868.31	1,263,897.27	1,444,187.08
Nevada Transportation Company	26,273.06	16,863.19	28,107.82	19,764.22	40,133.87	27,180.08
Procter Pacific Railroad	4,394.24	15,269.12	30,486.18	15,784.00	6,186.19	1,972.11
Silver Peak Railroad	121,491,894.74	141,633,880.34	76,249,954.97	90,941,279.58	45,242,939.77	50,692,610.78
Southern Pacific Company	505,807.91	695,611.74	343,005.16	311,717.06	232,802.75	318,894.74
Tonopah and Goldfield Railroad	505,807.91	489,831.63	293,953.43	199,134.49	276,854.14	270,707.19
Tonopah and Goldwater Railroad	290,009.95	280,854.10	213,003.73	211,152.89	47,006.22	68,732.31
Virginia and Truckee Railroad	8,270,282.21	9,888,483.56	4,940,622.41	6,180,055.24	3,319,659.80	3,708,428.32
The Western Pacific Railroad						
Totals	\$287,441,971.60	\$310,202,769.62	\$163,272,244.11	\$195,916,176.70	\$104,169,727.49	\$114,286,592.92

Italic figures denote deficit.

INCOME ACCOUNT

Company	Railway tax accruals		Uncollectible railway revenues		Railway operating income or deficit	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$5,375,740.66	\$10,585,159.13	\$23,749.48	\$20,378.09	\$42,782,585.79	\$41,869,349.15
Bullfrog Goldfield Railroad	9,628.83	8,212.89			21,592.39	18,940.16
Central Pacific Railroad	430.83	912.29			430.83	5,407.99
Eureka Nevada Railway	13,569.21	12,201.81		142.22	2,589.25	4,366.32
Las Vegas and Tonopah Railroad	586,220.06	783,444.21	939.73	498.86	4,297,716.38	4,261,559.41
Nevada-California-Oregon Railroad	23,373.24	24,640.11	93.62	84.69	44,909.08	12,868.51
Nevada Central Railroad	1,611.49	2,069.01			10,827.73	29,644.93
Nevada Copper Belt Railroad	4,434.14	6,066.90		.79	36,966.57	133,918.79
Nevada Northern Railway	72,063.62	423,674.35	18.47	.83	1,191,865.34	1,020,861.88
Nevada Transportation Company	1,647.21	2,886.37			39,386.06	24,261.71
Noche Pacific Railroad	781.50	839.06			6,186.90	1,572.11
Silver Peak Railroad	6,290,457.43	9,554,151.74	38,261.63		6,972.95	924.32
Southern Pacific Company	44,770.66	62,777.63	5.42	35,994.61	38,903,976.71	41,101,955.33
Tonopah and Goldfield Railroad	21,367.09	26,232.10	4.67	1,490.87	245,426.67	249,628.24
Tonopah and Tidewater Railroad	22,202.69	21,861.51			265,019.38	243,876.09
Virginia and Truckee Railway	376,409.17	482,297.07	591.66	14.03	2,942,588.97	47,866.67
The Western Pacific Railroad				196.66		3,215,956.60
Totals	\$13,344,117.74	\$22,007,457.70	\$63,663.68	\$58,795.53	\$90,761,946.07	\$92,220,339.69

Italic figures denote deficit.

INCOME ACCOUNT
OTHER INCOME

Company	Miscellaneous operating income		Total operating income		Hire and rent of equipment—Credit	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway						
Burlington Railroad						
Central Pacific Railroad	\$21,688.66	\$56,240.96	\$42,804,274.45	\$41,925,590.11	\$936,847.37	\$753,269.81
Central Nevada Railway			21,592.39	18,940.16	862.12	3,063.28
Eureka Nevada Railway			450.83	5,407.99		
Las Vegas and Toiyah Railway			2,569.26	4,366.32	3,242.28	1,484.30
Los Angeles and San Joaquin Railroad			4,267,716.38	4,251,589.41	55,361.16	56,363.17
Nevada California and Oregon Railway			14,509.08	2,888.61	1,166.50	589.26
Nevada Central Railroad			10,827.73	32,644.93		
Nevada Copper Belt Railroad			30,825.97	133,846.78	3,865.00	
Nevada Northern Railway			1,184,885.94	1,090,841.98	1,061.00	832.00
Nevada Transportation Company			59,338.04	24,521.97		
Pioche Pacific Railroad			6,136.96	1,672.11		
Silver Peak Railroad			6,974.85	944.42		
Union Pacific Company			38,903,976.71	46,673,752.06	1,038,373.56	3,969,779.47
Tonopah and Goldfield Railroad		5,571,794.62	248,498.67	6,010.89	5,010.89	10,494.16
Tonopah and Tidewater Railroad			245,019.39	241,401.83	29.80	
Virginia and Truckee Railway		2,573.26	24,903.63	47,866.67	100.00	
The Western Pacific Railroad			2,942,588.97	3,215,985.60	21,619.07	29,900.13
Totals	\$21,688.66	\$5,625,462.32	\$90,783,634.73	\$97,845,802.01	\$2,067,518.17	\$4,793,205.57

Italic figures denote deficit.

INCOME ACCOUNT

Company	Railway tax accruals		Uncollectible railway revenues		Railway operating income or deficit	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$5,875,740.65	\$10,585,159.13	\$23,748.48	\$20,378.06	\$42,782,585.79	\$41,869,349.15
Bullfrog Goldfield Railroad	9,628.83	8,212.89			21,582.39	18,940.16
Central Pacific Railroad						
Eureka Nevada Railroad	430.83	912.29			430.83	5,407.99
Las Vegas and Tonopah Railroad	13,859.21	12,201.81		142.22	2,589.25	4,366.32
Los Angeles and Salt Lake Railroad	585,220.04	783,444.21	939.73	488.85	4,257,716.38	4,251,559.41
Nevada-California-Oregon Railroad	23,373.24	24,640.11	98.62	84.59	44,909.08	12,858.51
Nevada Central Railroad	1,611.49	2,089.01			10,827.73	29,644.98
Nevada Copper Belt Railroad	4,454.14	6,066.90		79	36,966.57	133,915.79
Nevada Northern Railroad	72,063.62	423,674.35	18.47	.83	1,191,855.34	1,020,861.88
Nevada Transportation Company	1,647.21	2,886.37			39,336.06	24,281.71
Pioche Pacific Railroad					6,136.90	1,572.11
Silver Peak Railroad	781.50	839.06			6,973.95	924.32
Southern Pacific Company	6,290,457.43	9,554,151.74	38,281.63	35,984.61	38,903,976.71	41,101,965.43
Tonopah and Goldfield Railroad	44,770.66	62,777.63		1,480.87	248,426.67	249,626.24
Tonopah and Tidewater Railroad	21,357.09	26,232.10	4.67		255,019.38	243,976.09
Virginia and Truckee Railroad	22,202.59	21,861.51		14.08	24,803.63	47,866.67
The Western Pacific Railroad	376,459.17	492,297.07	591.66	186.65	2,942,586.97	3,215,835.60
Totals	\$13,344,117.74	\$22,007,457.70	\$63,663.68	\$58,796.53	\$80,761,946.07	\$82,220,339.69

Italic figures denote deficit.

INCOME ACCOUNT
OTHER INCOME

Company	Miscellaneous operating income		Total operating income		Hire and rent of equipment—	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway						
Bullfrog Goldfield Railroad			\$42,804,274.45	\$41,925,690.11	\$886,847.37	\$783,269.81
Central Pacific Railroad	\$21,688.66	\$56,240.96	21,592.39	18,940.16	862.12	3,083.28
Eureka Nevada Railway			430.82	5,407.99		
Las Vegas and Tonopah Railroad			2,589.25	4,866.82	3,242.28	1,484.30
Los Angeles and Salt Lake Railroad			4,257,716.38	4,251,659.41	55,361.15	55,353.17
Nevada-California-Oregon Railway			14,909.08	12,858.51	1,166.50	55,589.25
Nevada Central Railroad			10,827.73	29,644.98		
Nevada Copper Belt Railroad			38,986.57	133,918.79	3,855.00	
Nevada Northern Railroad			1,191,855.34	1,020,861.88	1,061.00	332.00
Nevada Transportation Company			39,336.06	24,261.71		
Pioche Pacific Railroad			6,136.90	1,572.11		
Silver Peak Railroad			6,973.65	844.22		
Southern Pacific Company			38,903,976.71	46,678,750.05	1,038,373.56	3,968,779.47
Tonopah and Goldfield Railroad		5,571,794.62	248,426.67	249,626.24	5,010.32	10,484.16
Tonopah and Tidewater Railroad			255,019.38	241,401.53	29.80	
Virginia and Truckee Railroad		2,573.26	24,803.63	47,856.67	100.00	
The Western Pacific Railroad			2,942,588.97	3,215,935.60	21,619.07	29,900.13
Totals	\$21,688.66	\$5,625,462.32	\$30,783,634.73	\$37,945,302.01	\$2,067,518.17	\$4,793,206.57

Italic figures denote deficit.

**INCOME ACCOUNT
OTHER INCOME**

Company	Joint facility rent income		Income from lease of road		Miscellaneous rent income	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$318,580.67	\$351,134.72	\$128,701.88	\$140,005.85	\$301,748.47	\$295,109.97
Bullfrog Goldfield Railroad						428.00
Central Pacific Railroad			21,888,988.00	14,639,667.33		
Eureka Nevada Railway			25,000.00	24,402.79		
Las Vegas and Tonopah Railroad	794.77	1,012.28				
Los Angeles and Salt Lake Railroad	1,682.47	3,922.43				
Nevada-California-Oregon Railway	1,400.00	1,610.00			18,490.46	23,038.97
Nevada Central Railroad					889.07	960.71
Nevada Copper Belt Railroad						
Nevada Northern Railway						150.50
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad	1,499.94	216,401.84	19,964.61	29,149.86	\$71,445.90	257,170.57
Southern Pacific Company					277.57	963.43
Tonopah and Goldfield Railroad	567.44	460.00	176.16		2,018.81	
Tonopah and Tidewater Railroad					717.00	722.83
Virginia and Truckee Railroad						
The Western Pacific Railroad	124.92	2,614.76			33,531.18	38,866.35
Totals	\$321,060.35	\$677,046.01	\$22,067,808.70	\$14,833,225.93	\$729,117.86	\$616,459.31

Italic figures denote deficit.

INCOME ACCOUNT
OTHER INCOME

Company	Miscellaneous nonoperat- ing physical property		Separately operated properties—Profit		Dividend income	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$6,027.56	\$12,925.99		\$52,305.48	\$102,196.00	\$123,953.71
Bullfrog Goldfield Railroad						
Central Pacific Railroad	69,362.62	88,140.27				
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad						
Los Angeles and Salt Lake Railroad	14,873.85	10,923.60				
Nevada-California-Oregon Railway	260.57	323.50				
Nevada Central Railroad						
Nevada Copper Belt Railroad						
Nevada Northern Railway						
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	180,109.89	145,738.82	10,557.48	11,814.83	16,964,542.82	17,946,240.15
Tonopah and Goldfield Railroad						
Tonopah and Tidewater Railroad	50.00	1,042.95				
Virginia and Truckee Railway						
The Western Pacific Railroad	3,994.21	8,174.31				
Totals	\$274,163.56	\$287,622.44	\$10,557.48	\$24,120.31	\$16,966,738.62	\$18,009,193.86

Italic figures denote deficit.

INCOME ACCOUNT
OTHER INCOME

Company	Income from funded securities		Income from unfunded securities and accounts		Miscellaneous incomes	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$6,623,383.48	\$7,592,827.06	\$1,536,615.26	\$1,451,631.54	\$475,264.44	\$452,628.33
Bullfrog Goldfield Railroad					11.03	
Central Pacific Railroad	244,771.01	448,880.55	7,112.90	6,089.91	392,716.00	332,154.96
Eureka Nevada Railroad						
Las Vegas and Tonopah Railroad	150.00	150.00	2,689.96	2,384.03		
Los Angeles and Salt Lake Railroad	4,232.60	1,189.82	17,380.59	11,935.90		
Nevada-California-Oregon Railroad			976.03	2,328.30	1,839.06	2,667.47
Nevada Central Railroad		194.82	104.71	425.47		
Nevada Copper Belt Railroad						
Nevada Northern Railroad			88,888.93	109,218.57		
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	11,250,634.23	9,486,023.19	596,813.52	942,553.39	240,323.30	20,065.52
Tonopah and Goldfield Railroad		855.83	15,574.65	13,146.29		
Tonopah and Tidewater Railroad	341.12	1,039.43	665.52	1,647.27		150.00
Virginia and Truckee Railroad			2,136.87	2,311.26		
The Western Pacific Railroad	1,921.39	8,754.71	144,776.32	384,299.98	827.10	
Totals	\$18,125,443.83	\$17,549,919.00	\$2,413,645.26	\$2,827,079.90	\$640,329.33	\$327,686.27

* Miscellaneous income includes income from sinking and other reserve funds; release of premiums on funded debt; contributions from other companies and miscellaneous income.
Italic figures denote deficit.

INCOME ACCOUNT
TOTAL NONOPERATING INCOME, GROSS INCOME, AND DEDUCTIONS FROM GROSS INCOME

Company	Total nonoperating income		Gross income or loss		Hire and rent of equipment—Dr.	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$10,429,376.18	\$11,206,792.45	\$53,293,649.63	\$53,131,362.56	\$152,309.41	\$167,606.46
Bullfrog Goldfield Railroad	868.18	3,479.23	22,455.54	22,419.44	6,724.91	2,304.47
Central Pacific Railway	22,607,823.53	15,535,943.01	22,607,823.53	15,535,943.01		
Eureka Nevada Railway	25,000.00	24,402.79	24,593.17	18,964.80		
Las Vegas and Tonopah Railroad	6,837.01	5,010.69	9,446.25	9,376.91	2,206.08	1,682.08
Los Angeles and Salt Lake Railroad	113,545.13	108,132.06	4,371,572.56	4,339,691.47	188,563.09	164,878.97
Nevada-California-Oregon Railway	4,171.03	4,642.76	45,060.11	17,601.57	30.10	9.00
Nevada Central Railroad	104.71	630.36	10,832.44	30,236.32		
Nevada Copper Belt Railroad	3,855.00		10,832.44	133,918.39		12,589.53
Nevada Northern Railway	89,896.83	109,701.07	1,291,751.97	1,200,822.35	26,800.67	37,279.66
Nevada Transportation Company			38,136.06	24,571.11		
Pioche Pacific Railroad			6,194.90	1,572.11		
Silver Peak Railroad			6,194.90	1,572.11		
Southern Pacific Company	30,100,513.17	33,022,937.63	66,004,539.93	79,696,737.48	445,925.64	529,334.44
Tonopah and Goldfield Railroad	20,323.54	25,329.51	269,399.21	274,981.75	7,133.95	5,292.59
Tonopah and Tidewater Railroad	3,848.95	4,323.45	253,893.23	245,735.48	10,135.17	10,123.39
Virginia and Truckee Railway	2,953.97	3,084.09	50,390.76	50,390.76	5,657.39	8,709.83
The Western Pacific Railroad	206,794.19	472,123.22	3,149,383.16	3,688,064.52	344,659.76	194,531.72
Totals	\$63,616,963.34	\$80,525,558.50	\$154,400,618.07	\$158,371,960.51	\$1,170,175.57	\$923,740.20

Italic figures denote deficit.

**INCOME ACCOUNT
DEDUCTIONS FROM GROSS INCOME**

Company	Joint facility rents		Rent for leased roads		Miscellaneous rents	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$820,587.87	\$843,728.81	\$1,329,465.67	\$1,339,710.62	\$161,389.80	\$165,469.96
Bullfrog Goldfield Railroad	258.00	258.00				225.00
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	516.00	516.00				30.00
Los Angeles and Salt Lake Railroad	271,971.92	278,718.60			1,247.23	1,306.84
Nevada-California-Oregon Railroad					741.90	
Nevada-Central Railroad						
Nevada Copper Belt Railroad						
Nevada Northern Railway						
Nevada Transportation Company	812.08	568.04	612.24	612.24		
Pioche Pacific Railroad			25,000.00	25,000.00		
Silver Peak Railroad						
Southern Pacific Company	220,387.60	137,552.49	51,472,963.41	35,966,579.70	648,887.25	497,982.92
Tonopah and Goldfield Railroad	4,783.98	4,577.22	12.00	12.00	2.00	22.00
Tonopah and Tidewater Railroad	555.59	721.47			10.00	5.00
Virginia and Truckee Railroad		1,800.00				
The Western Pacific Railroad	37,354.13	37,637.97			52,781.22	52,793.26
Totals	\$1,357,287.12	\$1,406,063.60	\$52,828,063.32	\$37,332,214.46	\$865,069.40	\$717,844.96

INCOME ACCOUNT
DEDUCTIONS FROM GROSS INCOME

Company	Miscellaneous tax accruals		Separately operated properties—Loss		Interest on funded debt	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$124.71	\$189.91	\$210,851.41	\$43,931.47	\$12,964,155.51	\$11,852,976.77
Bullfrog Goldfield Railroad					12,505.00	12,505.00
Central Pacific Railroad	235,377.50	306,671.13			8,419,757.64	8,407,288.21
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad						
Los Angeles and Salt Lake Railroad	91,432.02	78,370.50			2,282,459.28	2,302,120.00
Nevada-California-Oregon Railway	230.10	225.18			64,036.76	59,439.92
Nevada Central Railroad					7,500.00	30,000.00
Nevada Copper Belt Railroad					37,320.00	37,320.00
Nevada Northern Railway					11,008.06	5,000.00
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	594,658.72	318,344.64			11,707,160.31	12,067,834.10
Tonopah and Goldfield Railroad					18,000.00	5,950.00
Tonopah and Tidewater Railroad		92.78			163,742.79	160,647.89
Virginia and Truckee Railway						
The Western Pacific Railroad		33.96			246,812.67	858,446.64
Totals	\$981,823.06	\$708,928.10	\$210,851.41	\$43,931.47	\$35,336,454.02	\$35,799,528.53

INCOME ACCOUNT
DEDUCTIONS FROM GROSS INCOME

Company	Interest on unfunded debt		Other deductions ^a		Total deductions from gross income	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$14,801.11	\$13,518.87	\$45,412.92	\$89,721.12	\$15,099,108.41	\$14,626,853.89
Bullfrog Goldfield Railroad				273.20		15,565.67
Central Pacific Railroad			114,799.30	134,459.14	8,829,964.44	8,848,418.48
Eureka Nevada Railway			150.00	76.00	150.00	75.00
Las Vegas and Tonopah Railroad	30,578.39	27,493.89			33,900.47	29,691.92
Los Angeles and Salt Lake Railroad	4,238.10	20,933.23			2,835,279.74	2,893,719.89
Nevada-California-Oregon Railway	29.15		45,379.10	58,670.59	65,508.76	62,709.91
Nevada Central Railroad			478.75	1,728.97	7,500.00	30,000.00
Nevada Copper Belt Railroad	10,062.26	19,356.66			47,882.28	69,566.24
Nevada Northern Railroad	71,474.64	104,245.01			110,707.64	147,699.98
Nevada Transportation Company					25,000.00	25,000.00
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	25,302.33	31,881.34	279,207.51	248,536.86	65,414,512.77	49,597,886.49
Tonopah and Goldfield Railroad			113.40	102.60	30,044.73	15,956.41
Tonopah and Tidewater Railroad			7,887.86	5,829.59	182,881.40	177,414.12
Virginia and Truckee Railway					5,637.39	10,509.86
The Western Pacific Railroad	39.92	22,438.66	17,821.96	78,963.76	709,469.66	1,244,795.97
Totals	\$156,526.90	\$239,867.66	\$511,250.79	\$629,254.88	\$393,417,440.58	\$77,796,363.83

^aOther deductions include the following accounts: Amortization of discount on funded debt; maintenance of investment organization; income transferred to other companies; and miscellaneous income charges.

INCOME ACCOUNT
NET INCOME AND DISPOSITION OF NET INCOME

Company	Net income or loss		Income applied to sinking and other reserve funds		Dividend appropriations of income	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$38,134,541.22	\$38,504,528.67	\$68,928.09	\$70,484.11	\$19,922,435.00	\$22,995,087.50
Bullfrog Goldfield Railroad	6,862.63	6,863.77				
Central Pacific Railroad	13,777,964.09	6,687,524.53	58,502.97	56,003.06		
Eureka Nevada Railroad	24,419.17	18,919.80				
Las Vegas and Tonopah Railroad	23,554.27	50,315.01				
Los Angeles and Salt Lake Railroad	1,536,292.52	1,465,971.58	10,831.90	21,346.35		
Nevada-California-Oregon Railroad	16,153.65	15,806.64	6,780.00			
Nevada Central Railroad	3,432.44	285.32				
Nevada Copper Belt Railroad	6,540.69	64,362.55				
Nevada Northern Railroad	1,171,047.63	982,862.97				
Nevada Transportation Company	14,386.06	736.29			800,000.00	825,000.00
Pioche Pacific Railroad	6,136.90	1,572.11				
Silver Peak Railroad	6,873.56	934.32				
Southern Pacific Company	3,590,077.11	30,099,851.19	5,000.00	5,000.00		
Tonopah and Goldfield Railroad	239,244.48	259,029.34	74,000.00	105,000.00		
Tonopah and Tidewater Railroad	76,486.88	68,311.36				
Virginia and Truckee Railroad	22,100.11	40,390.90				25,000.00
The Western Pacific Railroad	2,439,913.50	2,443,288.85				1,650,000.00
Totals	\$90,868,177.49	\$80,575,996.68	\$224,042.96	\$258,783.52	\$19,922,435.00	\$25,195,087.50

Italic figures denote deficit.

**INCOME ACCOUNT
DISPOSITION OF NET INCOME**

Company	Income appropriated for investment in physical property		Miscellaneous appropriations of income		Balance carried forward to profit and loss	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$11,000,000.00	\$8,348,179.69	\$11,111.82	\$40,039.92	\$8,082,066.31	\$7,350,517.45
Bullfrog Goldfield Railroad	982.68	6,883.77
Central Pacific Railroad	13,719,461.12	6,631,521.47
Eureka Nevada Railway	24,419.17	18,919.80
Las Vegas and Tonopah Railroad	23,854.21	20,375.01
Los Angeles and Salt Lake Railroad	1,625,460.92	1,465,971.58
Nevada-California-Oregon Railway	1,444,625.23	.....	.....	23,208.65	45,208.64
Nevada-Central Railroad	3,482.44	285.82
Nevada Copper Belt Railroad	6,540.69	64,352.55
Nevada Northern Railroad	271,047.63	157,962.97
Nevada Transportation Company	14,336.06	733.29
Pioche Pacific Railroad	6,136.90	1,572.11
Silver Peak Railroad	6,973.95	324.32
Southern Pacific Company	3,585,077.11	30,094,351.19
Tonopah and Goldfield Railroad	165,244.48	153,029.34
Tonopah and Tidewater Railroad	76,486.83	68,311.36
Virginia and Truckee Railroad	22,100.11	15,380.90
The Western Pacific Railroad	2,439,913.50	798,268.85
Totals	\$11,000,000.00	\$9,792,804.92	\$11,111.82	\$40,039.92	\$29,825,537.71	\$46,764,982.40

Italic figures denote deficit.

PROFIT AND LOSS ACCOUNT

Company	Credit or debit balance transferred from income		Dividend appropriations of surplus		Credit or debit balance on December 31	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$8,082,006.31	\$7,360,517.45			\$82,043,452.11	\$83,193,364.30
Bullfrog Goldfield Railroad	962.63	6,853.77			1,810.02	107,490.87
Central Pacific Railway	13,719,461.12	6,631,621.47	\$1,706,132.60	\$5,080,530.00	5,080,745.13	6,001,610.06
Eureka Nevada Railway	24,419.17	18,919.80	40,000.00	20,000.00	18,680.01	17,599.81
Las Vegas and Tonopah Railroad	23,854.27	80,315.01			440,143.23	380,337.73
Los Angeles and Salt Lake Railroad	1,625,480.92				1,866,802.80	1,359,645.80
Nevada-California-Oregon Railway	23,808.66	45,809.64			64,014.90	437,999.38
Nevada Central Railroad	3,432.44	296.32			22,378.96	23,313.63
Nevada Copper Belt Railroad	6,540.69	64,362.56			143,182.10	85,572.49
Nevada Northern Railway	271,047.63	157,862.97			586,867.15	684,302.08
Nevada Transportation Company	14,836.06	739.39			8,612.86	4,871.06
Nevada Pacific Railroad	6,196.90	1,672.11			9,873.34	1,672.11
Sliver Peak Railroad	6,972.46	954.32			190,804.40	131,403.67
Southern Pacific Company	3,636,077.11	30,084,361.19	16,963,018.12	16,369,389.66	117,694,106.43	140,563,620.10
Tonopah and Goldfield Railroad	165,244.48	163,023.34	150,600.00	160,600.00	568,189.69	468,468.04
Tonopah and Tidewater Railroad	76,496.63	68,311.36			973,440.01	909,789.14
Virginia and Truckee Railway	22,100.11	16,380.90			437,319.39	435,768.14
The Western Pacific Railroad	2,439,913.60	793,268.86	76,000.00	25,000.00	1,439,307.32	1,819,701.16
Totals	\$39,825,687.71	\$45,289,010.82	\$18,833,660.62	\$21,645,429.66	\$163,970,363.96	\$179,293,154.38

Dividends out of surplus 1916:

Central Pacific Railway, preferred 4%, common 1½%.

Eureka Nevada Railway, common 4%.

Southern Pacific Company, common 6%.

Tonopah and Goldfield Railroad, preferred 7%, common 7%.

Virginia and Truckee Railway, common 1½%.

Italic figures denote deficit.

Dividends out of surplus, 1917:

Central Pacific Railway, preferred 6%, common 6%.

Eureka Nevada Railway, common 4%.

Southern Pacific Company, common 6%.

Tonopah and Goldfield Railroad, preferred 7%, common 7%.

Virginia and Truckee Railway, common 1%.

**OPERATING REVENUES
FREIGHT REVENUE**

Company	Nevada intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway						
Bullfrog Goldfield Railroad						
Central Pacific Railroad	\$19,761.33	\$22,515.51	\$2,171.90	\$2,009.04	\$85,605.01	\$98,801.48
Eureka Nevada Railway			73,232.02	65,841.17	\$2,993.35	\$7,856.68
Las Vegas and Tonopah Railroad	19,885.09	20,628.87	90,292.17	56,011.01	100,187.26	76,639.88
Los Angeles and Salt Lake Railroad	26,274.53	25,927.60	1,398,887.44	1,507,970.97	7,623,185.27	8,232,898.41
Nevada-California-Oregon Railway	138.81	322.01	38,056.23	36,815.36	258,987.99	257,740.96
Nevada Central Railroad	4,682.81	6,310.33	22,853.18	39,607.59	27,636.99	46,917.92
Nevada Copper Belt Railroad	24,971.46	136,721.01	54,540.04	75,418.12	79,511.62	212,139.13
Nevada Northern Railway	1,118,356.96	1,224,992.16	797,119.76	1,089,829.06	1,915,476.73	2,264,321.21
Nevada Transportation Company	17,586.78	13,704.08	47,298.77	49,130.95	64,990.55	62,836.08
Pioche Pacific Railroad	26,273.09	17,368.12			26,273.09	17,368.12
Silver Peak Railroad	2,825.49	4,858.96			2,825.49	4,858.96
Southern Pacific Company	279,464.90	295,086.06	10,273,842.49	12,189,243.27	73,710,071.81	87,084,321.90
Tonopah and Goldfield Railroad	164,475.60	149,536.98	341,464.07	337,874.46	505,989.87	487,411.44
Tonopah and Tidewater Railroad	39.74	10.65	23,665.11	10,024.80	438,945.68	406,379.74
Virginia and Truckee Railway	44,696.04	46,487.72	127,317.09	132,168.15	172,013.13	178,555.87
The Western Pacific Railroad	14,323.93	17,601.29	2,880,909.59	3,233,560.87	6,740,978.32	7,968,720.50
Totals	\$1,763,776.60	\$1,962,071.35	\$16,111,544.95	\$18,825,005.31	\$177,364,317.73	\$206,140,821.48

OPERATING REVENUES PASSENGER REVENUE

Company	Nevada Intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway					\$26,238,788.94	\$30,907,445.88
Burlingame and Santa Fe Railway					25,868.68	19,415.39
Central Pacific Railway	\$10,989.44	\$7,489.48	\$760.20	\$623.34		
Eureka Nevada Railway			14,869.14	11,925.91		
Las Vegas and Tonopah Railroad	13,574.32	10,874.84	7,662.08	8,682.74	21,236.35	16,657.58
Los Angeles and Salt Lake Railroad	31,206.42	31,691.66	656,278.17	766,639.10	2,968,336.06	3,475,246.13
Nevada-California-Oregon Railway	361.20	2,680.19	12,309.12	10,369.08	96,861.48	86,861.54
Nevada Central Railroad	11,246.00	12,766.81			11,246.00	12,766.81
Nevada Copper Belt Railroad	9,788.43	12,966.19	347.60	1,069.80	10,135.93	14,014.49
Nevada Northern Railway	78,222.60	86,816.67	68,383.64	100,971.62	146,666.14	186,868.19
Nevada Transportation Company	8,681.66	8,200.96			8,681.66	8,200.96
Pioche Pacific Railroad						
Silver Peak Railroad	471.71	196.60			471.71	196.60
Southern Pacific Company	881,088.97	428,997.76	1,980,355.86	2,525,392.60	27,445,146.03	33,234,935.92
Tonopah and Goldfield Railroad	56,162.26	51,494.11	28,778.61	27,709.43	82,941.87	79,173.59
Tonopah and Tidewater Railroad	4.31	4.31	5,423.38	4,684.08	54,018.40	48,193.38
Virginia and Truckee Railway	59,781.56	72,339.14	2,684.38	3,463.34	62,465.94	76,802.19
The Western Pacific Railroad	22,213.89	26,669.36	346,566.74	508,086.08	1,047,994.54	1,473,583.03
Totals	\$683,786.74	\$751,049.86	\$3,002,540.69	\$3,767,390.26	\$38,266,111.42	\$49,639,504.02

**OPERATING REVENUES
EXCESS BAGGAGE REVENUE**

Company	Nevada intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway			\$3.96	\$2.56	\$320,844.27	\$345,596.34
Bullfrog Goldfield Railroad			197.06	178.10	296.58	259.65
Central Pacific Railway	\$96.53	\$96.55				
Eureka Nevada Railway					330.06	265.94
Las Vegas and Tonopah Railroad	110.02	88.65	220.03	177.29	382,226.10	42,382.63
Los Angeles and Salt Lake Railroad	409.54	423.60	9,335.84	10,543.71	708.04	680.27
Nevada-California-Oregon Railroad			67.56	66.67	60.55	30.86
Nevada Central Railroad	60.55	30.98			239.07	230.75
Nevada Copper Belt Railroad	299.07	220.75			1,445.01	1,696.57
Nevada Northern Railroad	1,445.01	1,696.57			18.96	10.90
Nevada Transportation Company	18.96	10.90				
Pioche Pacific Railroad						
Silver Peak Railroad	10	.14			10	.14
Southern Pacific Company	3,794.49	4,461.82	34,144.69	36,860.33	321,287.17	363,696.81
Tonopah and Goldfield Railroad	1,306.42	1,198.39			1,306.42	1,198.39
Tonopah and Tidewater Railroad	.60		31.32	34.16	199.45	221.55
Virginia and Truckee Railroad	680.42	587.18	35.58	42.08	666.00	629.26
The Western Pacific Railroad	90.88	96.53	3,156.79	3,827.87	7,665.55	9,204.11
Totals	\$8,256.48	\$8,890.94	\$47,192.81	\$51,727.77	\$698,324.31	\$756,023.17

OPERATING REVENUES
MAIL REVENUE

Company	Nevada intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway					\$2,557,129.18	\$2,307,787.29
Bullfrog Goldfield Railroad					5,629.73	3,284.83
Central Pacific Railroad	\$1,876.41	\$1,094.98	\$535.45	\$535.45		
Central Nevada Railway			3,752.82	2,189.95		
Eureka Nevada Railway	2,291.23	1,324.38			6,875.80	3,973.14
Las Vegas and Tonopah Railroad	2,558.93	2,587.59	4,593.87	2,643.76	227,820.80	148,698.83
Los Angeles and Salt Lake Railroad			\$7,167.51	35,539.09	28,138.45	21,460.49
Nevada California-Oregon Railroad			\$3,118.35	\$2,108.12	4,680.91	4,608.29
Nevada Central Railroad	\$4,680.91	\$4,608.29			2,684.24	2,684.24
Nevada Central Belt Railroad	\$2,684.24	\$2,684.24			15,206.55	7,834.86
Nevada Copper Belt Railroad	\$15,206.55	\$7,834.86			153.34	372.91
Nevada Northern Railway	\$153.34	\$372.91				
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad	\$687.86	\$102.57			687.86	102.57
Southern Pacific Company			\$631,047.74	\$373,108.64	2,227,768.00	1,688,538.83
Tonopah and Goldfield Railroad	\$12,674.11	\$7,029.48			12,674.11	7,029.48
Tonopah and Tidewater Railroad			1,798.98	1,215.85	9,532.72	9,964.41
Virginia and Truckee Railroad	(*)	(*)	7,145.36	5,847.08	7,145.36	5,847.08
The Western Pacific Railroad			\$30,970.35	\$20,614.98	67,326.85	44,815.17
Totals	\$42,811.97	\$27,649.93	\$740,120.48	\$443,798.54	\$5,173,436.50	\$4,257,010.08

* Figures not segregated as between intrastate and interstate.

OPERATING REVENUES EXPRESS REVENUE

Company	Nevada Intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$523.78	\$572.53	\$391.63	\$398.97	\$4,115,908.88	\$5,208,377.68
Burlington Railroad			1,647.56	1,146.06	2,471.34	1,717.59
Central Pacific Railway						
Eureka Nevada Railway	767.68	645.41	1,535.37	1,250.32	2,303.05	1,895.33
Las Vegas and Tonopah Railroad	1,737.47	1,224.80	38,670.59	58,167.77	210,659.43	249,810.82
Nevada California and Salt Lake Railroad			961.16	1,126.14	9,163.12	11,431.97
Nevada Central Railroad	\$1,112.15	\$1,708.47			2,113.16	4,768.47
Nevada Copper Belt Railroad	\$2,128.34	\$4,847.55			2,128.34	4,847.55
Nevada Northern Railroad	\$18,673.25	\$20,601.88			18,673.25	20,601.88
Nevada Transportation Company	\$760.57	\$960.31			760.57	960.31
Pioche Pacific Railroad	\$133.44	\$77.07			133.44	77.07
Silver Peak Railroad			\$301,086.47	\$515,754.82	2,975,870.55	4,035,640.24
Southern Pacific Company	\$25,785.59	\$25,199.64			25,785.59	25,199.64
Tonopah and Goldfield Railroad			51.24	104.90	2,623.56	3,226.46
Tonopah and Tidewater Railroad			\$8,054.51	\$9,082.82	8,054.51	9,082.82
Virginia and Truckee Railway			79,132.83	42,982.06	199,609.83	141,644.06
The Western Pacific Railroad	990.00	832.14				
Totals	\$52,911.63	\$56,989.83	\$432,621.41	\$625,493.36	\$7,575,867.63	\$9,716,592.10

*Figures not segregated as between intrastate and interstate.

OPERATING REVENUES ALL OTHER RAIL-LINE TRANSPORTATION REVENUE

Company	Nevada intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway					\$1,410,559.59	\$1,793,187.25
Bullfrog Goldfield Railroad	\$2,360.11	\$539.18		80.29	7,080.33	1,587.62
Central Pacific Railroad			\$4,720.22	1,058.34		
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	482.79	2.33	965.57	4.67	1,448.36	7.00
Los Angeles and Salt Lake Railroad	2,362.88	1,479.61	39,261.62	29,027.76	210,738.24	169,408.60
Nevada-California-Oregon Railway			50.06	13.86	2,008.30	1,448.25
Nevada Central Railroad		200.00				200.00
Nevada Copper Belt Railroad	965.50	12,741.60			965.50	12,741.60
Nevada Northern Railway	4,588.05	6,804.30			4,588.05	6,804.30
Nevada Transportation Company	570.93	30.00			570.93	30.00
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	611.96	1,026.78	85,967.36	107,064.41	\$11,769,514.45	\$11,560,533.22
Tonopah and Goldfield Railroad	24,420.80	23,831.77			24,420.80	23,831.77
Tonopah and Tidewater Railroad					5.00	5.00
Virginia and Truckee Railway	774.50	963.95	2.50		777.00	963.95
The Western Pacific Railroad	.75	12.63	3,105.49	127.42	38,882.87	42,749.33
Totals	\$87,043.27	\$47,522.05	\$134,063.82	\$137,296.84	\$13,461,464.42	\$13,543,387.69

All other rail-line transportation revenue includes the following accounts: Sleeping-car, parlor and chair car, other passenger train, milk, switching, special service train, other freight train, all water transfers, and total water-line transportation revenue.

*Includes \$10,192,923.77 water-line transportation revenue.

bIncludes \$9,676,373.27 water-line transportation revenue.

OPERATING REVENUES
TOTAL RAIL-LINE AND WATER-LINE TRANSPORTATION REVENUE

Company	Nevada intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway			\$3,293.14	\$3,944.66	\$120,303,235.74	\$189,303,871.67
Bullfrog Goldfield Railroad			96,413.81	81,833.53	134,328.41	114,121.76
Central Pacific Railway	\$35,909.60	\$32,288.23				
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	37,121.33	\$3,664.48	96,259.04	65,815.20	132,380.87	99,479.77
Los Angeles and Salt Lake Railroad	64,549.57	63,234.76	2,200,801.21	2,408,089.00	11,276,984.00	12,318,411.42
Nevada-California-Oregon Railway	500.01	3,002.20	54,562.48	50,484.82	396,432.28	379,672.78
Nevada-California Railroad	21,762.42	25,624.76	22,853.18	39,607.59	44,615.60	65,232.35
Nevada Copper Belt Railroad	40,735.66	170,180.24	54,387.54	76,477.42	95,623.20	246,657.66
Nevada Northern Railway	1,236,497.25	1,347,845.45	865,453.39	1,140,800.57	2,101,950.74	2,488,646.02
Nevada Transportation Company	27,782.22	23,249.15	47,298.77	49,130.95	76,075.99	72,380.10
Pioche Pacific Railroad	26,273.09	17,368.12			26,273.09	17,368.12
Silver Peak Railroad	4,118.60	5,238.24			4,118.60	5,238.24
Southern Pacific Company	684,910.22	729,562.42	\$13,120,406.53	15,547,424.07	118,439,637.12	137,898,196.47
Tonopah and Goldfield Railroad	284,828.18	258,280.37	367,442.68	365,583.94	652,470.86	623,844.31
Tonopah and Tidewater Railroad	94.97	25.61	30,801.33	16,073.77	495,325.31	487,946.49
Virginia and Truckee Railroad	105,862.52	120,177.99	146,219.42	151,222.19	252,101.94	271,400.18
The Western Pacific Railroad	37,619.45	44,401.94	3,236,762.54	3,859,179.23	8,102,458.26	9,680,671.20
Totals	\$2,588,595.69	\$2,874,123.96	\$20,402,064.96	\$23,860,647.08	\$282,525,012.01	\$304,053,138.54

*Includes \$67,021.13 and \$962.03 not segregated.

**OPERATING REVENUES
STATION, TRAIN AND BOAT PRIVILEGES**

Company	Nevada intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway						
Bullfrog Goldfield Railroad						
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad						
Los Angeles and Salt Lake Railroad						
Nevada-California-Oregon Railway						
Nevada Central Railroad						
Nevada Copper Belt Railroad						
Nevada Northern Railway						
Nevada Transportation Company						
Pacific Pacific Railroad						
Silver Peak Railroad						
Southern Railway Company						
Tonopah and Goldfield Railroad						
Tonopah and Tidewater Railroad						
Vernon and Truckee Railway						
The Western Pacific Railroad						
Totals	\$2,222.45	\$198.96	\$11,091.07	\$11,094.56	\$484,261.25	\$539,689.13

Italic figures denote deficit.

OPERATING REVENUES
STORAGE—FREIGHT

Company	Nevada intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway			\$0.92	\$10.72	\$54,707.93	\$62,382.65
Bullfrog Goldfield Railroad	\$3.31	\$6.35	6.63	12.70	9.94	19.05
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	.25	50.76	.50	101.63	76	152.29
Los Angeles and Salt Lake Railroad	218.08	311.78			8,117.80	2,757.67
Nevada-California-Oregon Railway			18.63	22.62	49.00	822.76
Nevada Central Railroad						
Nevada Copper Belt Railroad	119.61	276.68			119.61	276.68
Nevada Northern Railway	143.64	204.70			143.64	204.70
Nevada Transportation Company	64.73				64.73	
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	2,439.39	1,812.79			99,620.83	73,596.67
Tonopah and Goldfield Railroad	141.69	156.22			141.69	156.22
Tonopah and Tidewater Railroad					3.04	
Virginia and Truckee Railway	102.12	761.09			102.12	761.09
The Western Pacific Railroad	196.31	671.13			990.47	1,643.92
Totals	\$3,418.03	\$4,250.49	\$26.68	\$147.47	\$158,961.46	\$162,962.66

**OPERATING REVENUES
STORAGE—BAGGAGE**

Company	Nevada intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway					\$36,140.08	\$41,451.31
Bullfrog Goldfield Railroad			\$2.65	\$10.55		
Central Pacific Railroad	\$1.88	\$4.42	3.77	8.83	5.65	13.25
Eureka Nevada Railway						
Los Vegas and Tonopah Railroad						
Las Vegas and Salt Lake Railroad	.27	1.60	.53	3.00	.80	4.60
Nevada-California-Oregon Railway	214.70	293.15			3,919.15	4,742.65
Nevada-Central Railroad			47.15	16.95	51.00	27.85
Nevada Copper Belt Railroad	6.23	43.52				
Nevada Northern Railway	196.85	386.35			6.23	43.52
Nevada Transportation Company					196.85	386.35
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	3,290.15	4,190.25			59,640.25	73,884.53
Tonopah and Goldfield Railroad	147.15	141.10			147.15	141.10
Tonopah and Tidewater Railroad						
Virginia and Truckee Railway	65.30	69.95			65.30	69.95
The Western Pacific Railroad	137.55	240.50			1,742.55	2,230.95
Totals	\$4,083.08	\$5,370.74	\$54.10	\$39.33	\$101,912.99	\$122,996.01

OPERATING REVENUES
DEMURRAGE

Company	Nevada intrastate revenues		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$96.33	\$99.00	\$277.00	\$129.00	\$274,630.87	\$374,760.26
Bullfrog Goldfield Railroad			190.67	198.00	286.00	297.00
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	53.33	21.33	106.67	42.67	160.00	64.00
Los Angeles and Salt Lake Railroad	680.00	908.00			31,649.50	42,272.50
Nevada-California-Oregon Railway			22.00	68.00	22.00	143.00
Nevada Central Railroad						
Nevada Copper Belt Railroad	507.00	2,940.00			507.00	2,940.00
Nevada Northern Railway	2,016.00	2,094.00			2,016.00	2,094.00
Nevada Transportation Company	111.36	50.00			111.36	50.00
Pioche Pacific Railroad						
Silver Peak Railroad	56.00	4.00			56.00	4.00
Southern Pacific Company	9,431.00	12,732.00			168,691.08	284,391.46
Tonopah and Goldfield Railroad	1,086.00	1,067.00			1,086.00	1,067.00
Tonopah and Tidewater Railroad			129.00		129.00	147.00
Virginia and Truckee Railway	184.00	391.00			184.00	391.00
The Western Pacific Railroad	562.00	629.00			562.00	629.00
Totals	\$14,767.01	\$30,965.33	\$725.34	\$432.67	\$490,774.99	\$700,105.42

**OPERATING REVENUES
TELEGRAPH AND TELEPHONE**

Company	Nevada interstate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway			\$570.01	\$419.89	\$172,974.85	\$208,019.32
Bullfinch Goldfield Railroad						
Central Pacific Railway						
Great Northern Railway						
Las Vegas and Tonopah Railroad	\$173.78	\$182.28	947.56	964.56	521.34	988.84
Las Vegas and Salt Lake Railroad	713.52	867.44	1,992.12	2,306.64	12,304.84	14,469.31
Nevada-California-Oregon Railway						
Nevada Central Railroad						
Nevada Copper Belt Railroad	1,868.10	2,415.42			1,868.10	2,415.42
Nevada Northern Railroad						
Nevada Transportation Company	12,171.96	18,114.37			12,171.96	18,114.37
Pioche Pacific Railroad		230.00				230.00
Silver Peak Railroad						
Southern Pacific Company						
Tonopah and Goldfield Railroad			9,147.96	9,059.96	80,085.06	80,000.00
Tonopah and Tidewater Railroad						
Virginia and Truckee Railroad			284.12	216.81	1,276.74	1,178.61
The Western Pacific Railroad						
Totals	\$14,942.36	\$21,799.51	\$12,291.77	\$12,244.96	\$281,169.38	\$319,813.87

**OPERATING REVENUES
MISCELLANEOUS OPERATING REVENUES***

Company	Nevada Intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway					\$400,729.84	\$615,164.11
Bullfinch Goldfield Railroad	\$67.05	\$40.33	\$134.10		201.15	121.00
Central Pacific Railroad						
Eureka, Nevada Railroad	.63	1.60	1.27	8.17	1.90	4.77
Las Vegas and Tonopah Railroad		104,985.73	247,733.72	38,904.11	299,295.76	338,981.38
Los Angeles and Salt Lake Railroad		940.00	1,240.59	375.81	5,138.45	3,707.10
Nevada-California-Oregon Railroad		497.99			319.82	1,497.98
Nevada Central Railroad	\$19.82	1,302.76			789.04	1,302.76
Nevada Copper Belt Railroad	769.04	2,954.79			2,636.83	2,954.79
Nevada Northern Railroad	2,636.83	4,142.30			5,721.72	4,142.30
Nevada Transportation Company	5,721.72					
Pioche Pacific Railroad						
Silver Peak Railroad	120.00				120.00	
Southern Pacific Company	169,484.80	192,981.74	144,909.55	211,457.22	2,427,408.27	3,035,167.90
Tonopah and Goldfield Railroad	\$53.31	897.78			953.31	897.78
Tonopah and Tidewater Railroad					8,900.63	119.53
Virginia and Truckee Railroad	7,538.59	8,233.99			7,538.59	8,233.99
The Western Pacific Railroad	1,831.30	17,817.11	29,476.47	36,569.73	146,021.16	194,566.73
Totals	\$188,929.84	\$383,297.16	\$423,495.70	\$287,385.63	\$3,295,386.14	\$4,205,011.78

*Miscellaneous operating revenues include the following accounts: Dining and buffet; hotel and restaurant; parcel room; grain elevator; stockyard; power; rents of buildings and other property, and miscellaneous revenues.

OPERATING REVENUES
TOTAL INCIDENTAL OPERATING REVENUES

Company	Nevada intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway					\$1,231,734.71	\$1,650,551.36
Bullfrog Goldfield Railroad	\$167.57	\$89.44	\$378.56	\$770.35	502.74	208.30
Central Pacific Railroad			335.17	138.96		
Eureka Nevada Railway						622.40
Las Vegas and Tonopah Railroad	228.26	207.47	456.53	414.38	684.79	409,331.00
Los Angeles and Salt Lake Railroad	87,108.46	107,256.86	38,892.71	41,612.31	346,170.07	4,200.70
Nevada-California-Oregon Railway	515.50	240.00	813.45	476.28	6,315.58	2,913.31
Nevada Central Railroad	2,202.92	2,913.31			2,202.92	4,462.96
Nevada Copper Belt Railroad	1,400.88	4,462.96			1,400.88	23,756.21
Nevada Northern Railway	17,164.28	23,756.21			17,164.28	4,422.20
Nevada Transportation Company	5,887.80	4,422.20			5,887.80	
Pioche Pacific Railroad						
Silver Peak Railroad	176.00	4.00			176.00	4.00
Southern Pacific Company	180,804.48	211,878.57	159,977.10	230,312.78	3,017,488.65	3,703,574.56
Tonopah and Goldfield Railroad	1,737.05	1,767.43			1,737.05	1,767.43
Tonopah and Tidewater Railroad			270.87	216.81	10,309.46	1,445.19
Virginia and Truckee Railway	7,908.01	9,455.92			7,908.01	9,455.92
The Western Pacific Railroad	15,332.59	19,358.82	30,351.01	37,405.15	163,733.26	213,163.35
Totals	\$320,623.80	\$385,802.19	\$231,975.40	\$311,347.47	\$4,812,466.20	\$6,029,878.89

OPERATING REVENUES
TOTAL RAILWAY OPERATING REVENUES

Company	Nevada Intrastate revenue		Interstate revenue assigned to State of Nevada		Total revenue—Entire line	
	1916	1917	1916	1917	1916	1917
Totals	\$2,905,842.29	\$3,259,926.15	\$19,669,209.38	\$24,161,994.55	\$287,441,993.60	\$310,202,769.58
Atchison, Topeka and Santa Fe Railway						
Bullfrog Goldfield Railroad						
Central Pacific Railway	\$36,077.17	\$32,357.67	\$4,741.70	\$4,715.01	\$121,578,879.47	\$140,978,986.14
Eureka Nevada Railway					134,881.16	114,380.06
Las Vegas and Tonopah Railroad	37,360.09	33,871.95	95,715.57	63,230.22	133,086.56	100,102.17
Los Angeles and Salt Lake Railroad	151,653.08	170,600.62	2,229,493.82	2,444,631.31	b11,666,894.78	112,766,123.12
Nevada-California-Oregon Railway	1,015.51	3,242.20	55,375.96	50,951.10	331,747.96	383,673.48
Nevada Central Railroad	23,966.54	25,638.07	22,863.18	38,607.69	46,513.52	85,145.66
Nevada Copper Belt Railroad	42,184.84	174,643.20	54,957.54	76,477.42	97,024.06	251,420.25
Nevada Northern Railway	1,233,651.63	1,571,601.95	865,453.59	1,140,800.57	2,119,115.02	2,692,440.35
Nevada Transportation Company	33,870.02	27,671.35			30,363.19	19,862.30
Pioch Pacific Railroad	24,973.60	17,895.32	47,283.77	49,130.95	29,373.09	15,963.12
Sierra Pacific Railroad	24,252.60	6,462.34			1,530.40	1,242.24
Southern Pacific Company	842,343.53	941,440.59	12,315,551.75	15,777,795.35	c121,481,980.74	8141,653,380.36
Tonopah and Goldfield Railroad	286,545.29	260,027.60	347,642.65	343,558.04	631,207.97	625,611.74
Tonopah and Tidewater Railroad	94.97	21.61	31,072.76	16,290.53	505,634.77	489,391.48
Virginia and Truckee Railway	113,780.53	129,635.91	144,219.49	151,222.19	260,009.36	280,854.10
The Western Pacific Railroad	62,962.04	63,766.76	3,324,143.85	3,896,584.43	d8,270,262.21	b9,888,483.56
Totals	\$2,905,842.29	\$3,259,926.15	\$19,669,209.38	\$24,161,994.55	\$287,441,993.60	\$310,202,769.58

Notes refer to joint facility operating revenue included in total operating revenue.

*\$43,909.02.

b\$31,730.71.

c\$24,854.97.

d\$4,020.69.

*\$24,513.11.

f\$58,980.70.

g\$51,609.38.

h\$4,649.01.

STOCKS, BONDS, AND OTHER SECURITIES OWNED

Company	Total securities owned— Par value		Total securities owned— Book value		Income from funded securities	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$274,000,129.20	\$288,386,682.18	\$111,616,631.56	\$121,945,014.40	\$48,769,065.09	\$49,169,412.30
Bullfrog Goldfield Railroad						
Central Pacific Railroad	7,486,682.12	6,699,441.96	1,969,074.48	1,429,288.96	244,771.01	454,980.46
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	888,900.00	888,900.00	888,900.00	888,900.00	62,819.96	12,514.08
Los Angeles and Salt Lake Railroad	965,873.00	387,979.00	106,700.94	148,686.94	\$21,693.19	112,225.42
Nevada-California-Oregon Railroad	16,183.38	24,997.00	16,183.38	24,997.00	\$976.08	\$2,238.30
Nevada Central Railroad						194.92
Nevada Copper Belt Railroad						
Nevada Northern Railway						
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad					\$88,889.93	\$109,218.57
Southern Pacific Company	399,233,183.57	728,464,348.00	198,453,749.90	418,280,968.28	412,077,776.06	428,393,946.72
Tonopah and Goldfield Railroad	191,100.00	191,100.00	191,100.00	191,100.00	\$16,574.66	114,001.82
Tonopah and Tidewater Railroad					\$1,008.64	\$2,680.70
Virginia and Truckee Railroad		2,462,016.79	884,735.46	1,775,282.82	\$2,196.87	\$2,511.26
The Western Pacific Railroad	1,109,048.79				\$147,624.81	\$38,064.69
Totals	\$692,492,160.06	\$1,027,477,468.92	\$309,065,925.72	\$644,614,067.04	\$21,362,073.23	\$38,646,767.29

*Includes income from unfunded securities and accounts.

*\$1,955,661.61.
b\$2,669.96.

c\$17,960.59.
d\$327,141.82.

e\$145,603.42.
f\$65,069.91.

g\$1,647.27.
h\$384,269.98.

i\$942,583.88.
j\$13,146.23.

SINKING, INSURANCE AND OTHER FUNDS

Company	Total additions to fund during year		Balance in fund at close of year		Cash in funds uninvested at close of year	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$56,218.09	\$70,617.11	\$1,915,887.01	\$1,974,401.62	\$1,915,887.01	\$1,974,401.62
Bullfrog Goldfield Railroad						
Central Pacific Railroad	2.97	3.06	4,585,900.96	4,585,904.01	121.21	124.27
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad						
Los Angeles and Salt Lake Railroad	10,331.90	21,346.35	21,659.66	43,006.01	223.41	10,969.34
Nevada-California-Oregon Railway	14,085.00	177.79	177.79		177.79	
Nevada Central Railroad						
Nevada Copper Belt Railroad						
Nevada Northern Railway						
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company						
Tonopah and Goldfield Railroad						
Tonopah and Tidewater Railroad	17,218.19	17,209.14	210,014.32	227,223.46		
Virginia and Truckee Railroad						
The Western Pacific Railroad						
Totals	\$98,396.15	\$109,176.66	\$6,733,619.73	\$6,780,636.10	\$1,916,339.42	\$1,985,486.23

OPERATING EXPENSES MAINTENANCE OF WAY AND STRUCTURES

Company	Superintendence		Maintaining roadway and track		Maintaining track structures	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$1,264,869.99	\$1,365,337.13	\$10,634,044.80	\$10,308,524.74	\$1,821,667.19	\$1,669,125.40
Burlington Railroad	947.26	961.86	23,850.56	18,567.97	586.02	943.46
Central Pacific Railway						
Eureka Nevada Railway	1,020.42	1,445.09	21,323.02	15,222.76	1,136.23	935.45
Las Vegas and Tonopah Railroad	93,897.65	114,503.10	630,695.16	756,413.89	117,961.32	194,322.76
Nevada-California-Oregon Railway	4,347.67	4,357.25	13,643.61	49,180.33	8,444.88	5,177.16
Nevada Central Railroad	1,125.00	1,241.70	5,843.70	13,176.31		
Nevada Copper Belt Railroad	473.50	5,944.41	185,363.54	13,593.38	51.29	105.04
Nevada Northern Railway	6,700.32	9,945.66	195,363.44	122,403.83	10,968.89	11,265.68
Nevada Transportation Company	666.56	1,841.41	48,520.53	41,643.37		
Pacific Electric Railroad			22,576.53	42,990.25		
Silver Peak Railroad		200.00	462.36	4518.20		
Southern Pacific Company	821,697.70	897,690.16	7,859,617.52	7,481,193.35	1,824,549.76	1,885,351.02
Tonopah and Goldfield Railroad	8,551.51	8,351.22	41,572.18	30,181.93	1,850.08	1,501.51
Tonopah and Tidewater Railroad	5,487.24	6,393.50	39,933.81	35,121.02	11,022.61	5,652.18
Virginia and Truckee Railway	4,200.00	4,183.46	44,546.03	34,812.38	5,820.39	6,684.73
The Western Pacific Railroad	66,520.30	85,980.48	709,758.54	820,230.42	311,974.55	479,718.76
Totals	\$2,231,008.04	\$2,504,174.36	\$20,237,390.07	\$19,694,565.34	\$4,116,045.21	\$4,191,443.13

*Includes cost of maintaining track structures.

OPERATING EXPENSES
MAINTENANCE OF WAY AND STRUCTURES

Company	Maintaining auxiliary structures		Depreciation of way and structures		Injuries to persons	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$1,640,256.44	\$1,962,169.38			\$45,901.68	\$45,980.13
Bullfrog Goldfield Railroad	1,271.19	1,466.32				
Central Pacific Railroad				\$900.00		
Eureka Nevada Railway	1,411.79	846.61			42.55	37.62
Las Vegas and Tonopah Railroad	95,270.88	138,899.08	\$3,848.40	3,848.40	4,759.84	7,980.09
Los Angeles and Salt Lake Railroad	2,943.78	1,983.85	14,813.96	6,748.14	209.60	61.00
Nevada-California-Oregon Railway	236.88	439.98				
Nevada Central Railroad	626.99	950.42	460.92	460.92	15.00	
Nevada Copper Belt Railroad	15,022.00	26,225.41	67,000.20	67,000.20	25.00	2,983.11
Nevada Northern Railway	300.45	1,611.23				
Nevada Transportation Company						
Pioche Pacific Railroad			2,786.30			
Silver Peak Railroad	1,355,687.62	1,616,598.98	48,877.68	51,029.21	57,008.16	40,800.92
Southern Pacific Company	2,415.25	3,570.23			435.99	418.53
Tonopah and Goldfield Railroad	1,019.95	1,861.07			157.16	156.28
Tonopah and Tidewater Railroad	3,380.21	7,014.37				
Virginia and Tidewater Railroad						
The Western Pacific Railroad	61,215.99	149,813.53			4,527.97	6,654.29
Totals	\$3,181,049.42	\$3,902,445.41	\$187,286.36	\$129,886.87	\$116,082.95	\$104,281.97

OPERATING EXPENSES
MAINTENANCE OF WAY AND STRUCTURES

Company	Other way and structure expense		Maintaining joint track, etc.—Debtor		Maintaining joint track, etc.—Creditor	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$449,880.40	\$538,012.24	\$297,680.99	\$355,886.45	\$178,739.92	\$256,999.34
Bullfrog Goldfield Railroad	1,654.77	1,603.49	268.40	81.16		
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	1,613.19	1,510.38	120.00	120.00	707.13	224.80
Los Angeles and Salt Lake Railroad	37,407.61	55,022.19	130,355.36	191,441.94	3,124.96	6,396.49
Nevada-California-Oregon Railroad	3,989.34	2,882.76	104.68	81.75		
Nevada Central Railroad	*896.54			903.69		
Nevada Copper Belt Railroad	686.68	1,272.30	164.04	191.38		
Nevada Northern Railroad	10,309.70	10,399.04				
Nevada Pacific Railroad	*169.30	*532.44				2,438.08
Pioche Transportation Company						
Silver Peak Railroad						
Southern Pacific Company	552,333.72	594,670.97	17,128.70	78,013.08	237,696.70	218,632.69
Tonopah and Goldfield Railroad	4,170.28	4,301.30	3,040.80	3,040.80		
Tonopah and Tidewater Railroad	3,510.69	4,735.69	408.76	1,136.97	152.80	307.63
Virginia and Truckee Railway	1,782.70	1,979.86				
The Western Pacific Railroad	31,662.16	31,904.25	4,328.41	4,162.79	1,361.57	1,355.00
Totals	\$1,100,006.96	\$1,248,826.91	\$453,696.14	\$635,089.91	\$421,772.63	\$466,257.53

*Includes injuries to persons.
Italic figures denote credit.

OPERATING EXPENSES
MAINTENANCE OF WAY AND STRUCTURES, AND MAINTENANCE OF EQUIPMENT

Company	Total maintenance of way and structures		Superintendence		Repairs of machinery and other apparatus	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$15,978,801.57	\$15,997,975.63	\$838,620.47	\$864,368.00	\$388,603.18	\$551,475.82
Bullfrog Goldfield Railroad	30,588.49	23,614.28	939.19	945.91	23.44	45.20
Central Pacific Railway						
Eureka Nevada Railway	25,969.67	900.00	950.90	1,029.76	46.53	64.93
Las Vegas and Tonopah Railroad	1,111,083.27	19,929.73	70,377.61	76,315.61	55,702.44	55,347.76
Los Angeles and Salt Lake Railroad	107,409.52	1,386,182.96	1,977.56	2,639.91	55,411.46	239.27
Nevada-California-Oregon Railroad	8,969.12	70,637.26	900.00	1,125.00	578.28	98.89
Nevada Central Railroad	7,923.96	5,694.03	582.00	1,927.98	52.96	5,264.95
Nevada Copper Belt Railroad	245,349.56	17,764.83	6,253.99	7,423.39	3,684.20	5,294.58
Nevada Northern Railroad	7,876.19	247,070.85	202.80	1,263.52	406.69	
Nevada Transportation Company	2,575.53	15,610.45				
Pioche Pacific Railroad	2,848.16	2,290.22		200.00		
Silver Peak Railroad	12,299,124.06	718.20	713,306.15	742,722.26	438,459.13	519,238.73
Southern Pacific Company	62,036.09	12,428,717.00	7,980.16	7,361.74	1,625.11	1,284.42
Tonopah and Goldfield Railroad	81,387.82	41,365.51	4,847.09	5,247.98	1,398.47	800.30
Tonopah and Tidewater Railroad	59,729.33	54,352.06	2,160.00	1,806.00	248.21	170.44
Virginia and Truckee Railroad	1,186,935.25	56,679.80	25,662.50	27,830.92	17,232.95	27,174.06
The Western Pacific Railroad		1,677,089.52				
Totals	\$31,200,692.59	\$31,944,556.37	\$1,674,712.42	\$1,842,246.98	\$913,441.08	\$1,161,726.58

Italic figures denote credit

**OPERATING EXPENSES
MAINTENANCE OF EQUIPMENT**

Company	Locomotives—Repairs		Cars—Repairs		Floating equipment—Repairs	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$3,023,769.80	\$10,696,777.82	\$5,496,222.21	\$6,313,272.46		
Bullfrog Goldfield Railroad	7,454.39	9,863.37	4,069.22	1,699.36	\$54,906.97	\$106,776.67
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	12,648.57	6,737.41	2,532.42	1,245.31		
Los Angeles and Salt Lake Railroad	865,318.05	967,246.82	390,069.65	493,802.26		
Nevada-California-Oregon Railroad	24,308.81	22,786.23	14,673.11	21,754.97		
Nevada Central Railroad	3,163.54	3,954.55	1,632.80	991.37		
Nevada Copper Belt Railroad	4,317.63	4,533.78	1,963.91	7,579.01		
Nevada Northern Railroad	61,969.96	83,747.24	69,558.16	122,860.72		
Nevada Transportation Company	1,225.81	1,310.42	2,993.69	1,668.77		
Northern Pacific Railroad	1,130.12	1,635.64	597.66	862.44		
Silver Peak Railroad	1,070.52	475.19	6.80			
Southern Pacific Company	6,292,523.23	6,571,573.52	5,317,602.80	5,362,930.31	882,176.53	830,273.51
Tonopah and Goldfield Railroad	23,846.53	12,844.55	18,734.06	21,054.36		
Tonopah and Tidewater Railroad	24,223.66	13,869.51	7,069.10	4,786.39		
Virginia and Truckee Railroad	8,521.13	8,462.97	7,356.77	8,489.39		
The Western Pacific Railroad	376,054.20	451,470.51	191,576.61	275,863.13	13,505.02	8,163.90
Totals	\$15,736,660.05	\$18,869,864.93	\$11,527,272.67	\$12,548,316.43	\$990,588.57	\$947,213.08

**OPERATING EXPENSES
MAINTENANCE OF EQUIPMENT**

Company	Work and miscellaneous equipment—Repairs		Equipment depreciation and retirement		Injuries to persons	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$140,011.57	\$113,698.92	\$4,175,827.40	\$4,549,118.50	\$56,350.88	\$79,865.78
Bullfrog Goldfield Railroad	191.86	690.48	3,430.00	8,858.09		
Central Pacific Railroad						
Eureka Nevada Railroad	781.31	822.59	12,417.58	7,922.02		
Las Vegas and Tonopah Railroad	18,879.14	26,215.63	212,303.88	214,282.76	1,770.37	4,364.82
Los Angeles and Salt Lake Railroad	1,921.67	2,716.58	7,086.50	11,184.82		20.00
Nevada-California-Oregon Railway			444.00	444.00		
Nevada Central Railroad	229.03	223.87	4,787.70	4,686.00	5.28	
Nevada Copper Belt Railroad	4,806.12	4,349.59	31,080.72	34,729.82		1,749.32
Nevada Northern Railway		251.48		\$77.00		
Nevada Transportation Company	508.54					
Pioche Pacific Railroad			1,053.02	344.40		
Silver Peak Railroad	356,230.10	334,645.04	3,073,226.08	2,816,549.70	42,961.35	31,018.02
Southern Pacific Company	453.53	89.96	30,613.45	30,294.27	432.56	417.71
Tonopah and Goldfield Railroad	1,050.56	408.47	5,223.70	5,859.69	154.64	148.28
Tonopah and Tidewater Railroad	5.79	404.88	17,279.64	10,336.94		
Virginia and Truckee Railway	27,638.95	41,857.06	88,915.50	139,259.50	3,289.38	1,598.48
The Western Pacific Railroad						
Totals	\$552,770.17	\$528,345.17	\$7,663,579.18	\$7,887,841.91	\$104,984.36	\$119,182.41

**OPERATING EXPENSES
MAINTENANCE OF EQUIPMENT**

Company	Other equipment expense		Maintaining joint equipment at terminals—Debtor		Maintaining joint equipment at terminals—Creditor	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$123,600.23	\$154,326.00	\$26,151.83	\$26,542.09	\$10,863.82	\$13,793.09
Bullfrog Goldfield Railroad	238.72	239.48				
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	253.06	12.80				
Los Angeles and Salt Lake Railroad	8,392.30	10,082.88				
Nevada-California-Oregon Railroad	706.39	682.17		34,414.31		
Nevada Central Railroad	*899.07	*417.57				
Nevada Copper Belt Railroad	391.29	533.86				
Nevada Northern Railway	4,756.73	5,067.45				
Nevada Transportation Company		232.01				
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	767,548.67	768,390.27	16,353.04	\$2,669.33	13,053.74	11,997.42
Tonopah and Goldfield Railroad	1,710.48	1,667.01				
Tonopah and Tidewater Railroad	840.63	696.38				
Virginia and Truckee Railroad	476.47	577.87				
The Western Pacific Railroad	23,232.87	25,879.96				
Totals	\$982,541.93	\$999,514.23	\$98,950.80	\$93,625.73	\$23,922.56	\$36,790.51

Italic figures denote credit.

*Includes injuries to persons.

OPERATING EXPENSES
MAINTENANCE OF EQUIPMENT, TRAFFIC EXPENSES AND TRANSPORTATION—RAIL-LINE EXPENSES

Company	Total maintenance of equipment expenses		Total traffic expenses		Superintendence and dispatching of trains	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$19,825,900.72	\$23,544,427.97	\$2,271,451.60	\$2,317,636.59	\$1,510,212.33	\$1,753,003.56
Bullfrog Goldfield Railroad	16,391.82	21,782.00	6,161.06	5,310.36	2,023.48	2,015.67
Central Pacific Railroad						
Eureka Nevada Railway	29,530.19	3,595.70				
Las Vegas and Tonopah Railroad	17,835.72	17,835.72	8,745.14	8,334.92	2,548.14	2,574.22
Los Angeles and Salt Lake Railroad	1,699,249.33	1,811,902.32	39,632.83	388,537.04	109,013.53	118,108.06
Nevada-California-Oregon Railroad	51,040.49	63,192.44	8,685.87	6,060.15	3,613.45	4,915.81
Nevada Central Railroad	7,127.69	7,211.76			900.00	1,125.00
Nevada Copper Belt Railroad	12,064.83	19,632.39	1,741.53	1,923.07	2,579.22	4,369.18
Nevada Northern Railroad	182,109.23	265,822.13	7,897.82	9,917.66	14,327.26	17,365.64
Nevada Transportation Company	4,828.79	6,086.73	270.23	1,438.63	400.00	1,371.55
Pioche Pacific Railroad	2,231.82	2,013.08				
Silver Peak Railroad	2,130.14	1,019.59	35.06	20.94		200.00
Southern Pacific Company	17,397,631.10	17,968,013.87	2,111,922.66	2,099,589.65	995,233.39	1,171,408.19
Tonopah and Goldfield Railroad	84,899.88	80,984.24	21,915.28	19,237.91	23,413.82	19,960.70
Tonopah and Tidewater Railroad	42,807.75	31,886.00	23,729.91	26,928.67	5,319.22	5,420.53
Virginia and Truckee Railroad	36,377.01	30,728.04	4,514.66	3,512.06	5,940.00	5,863.89
The Western Pacific Railroad	767,457.36	999,072.74	243,247.60	254,562.02	80,548.91	93,437.86
Totals	\$40,131,628.52	\$44,880,076.94	\$5,102,147.15	\$5,153,009.69	\$2,755,273.10	\$3,201,025.01

**OPERATING EXPENSES
TRANSPORTATION—RAIL-LINE**

Company	Station service		Yard enginemen		Other yard employees	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$5,461,766.76	\$6,682,533.83	\$839,631.12	\$1,173,012.97	\$1,686,934.56	\$2,379,779.91
Bullfrog Goldfield Railroad	5,874.25	4,364.52				
Central Pacific Railway						
Eureka Nevada Railway	3,415.49	2,967.22		1.83		
Las Vegas and Tonopah Railroad	341,943.40	349,441.66	46,516.94	62,160.94	90,305.66	113,873.83
Nevada and Salt Lake Railroad	13,606.37	13,554.43		2,017.67		756.06
Nevada-California-Oregon Railway	4,442.33	7,556.85				
Nevada Central Railroad	4,619.81	7,169.61				
Nevada Copper Belt Railroad	27,968.22	37,463.11	9,589.36	10,023.80	5.85	16,948.62
Nevada Northern Railway	3,168.25	4,896.44				
Nevada Transportation Company						
Pioche Pacific Railroad	1,061.01	664.45				
Silver Peak Railroad	4,866,346.40	5,776,894.34	649,014.13	901,567.70	1,704,069.22	2,380,069.35
Southern Pacific Company	23,389.20	24,867.39	3,849.07	3,660.26	4,699.75	4,669.46
Tonopah and Goldfield Railroad	11,178.53	10,927.63				
Tonopah and Tidewater Railroad	18,816.40	17,106.63				
Virginia and Truckee Railway	391,621.18	468,150.45	31,049.30	47,431.36	66,011.71	97,170.19
The Western Pacific Railroad						
Totals	\$11,183,116.69	\$13,383,507.55	\$1,579,649.72	\$2,199,966.52	\$3,575,621.96	\$4,993,147.46

OPERATING EXPENSES TRANSPORTATION—RAIL-LINE

Company	Fuel and power for yard locomotives		Other yard expenses		Train engineers and motormen	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$395,252.83	\$1,475,797.36	\$376,461.54	\$506,718.08	\$4,233,330.53	\$4,943,978.90
Bullfrog Goldfield Railroad					6,212.14	8,282.08
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad					6,615.02	3,825.46
Los Angeles and Salt Lake Railroad	44,873.12	49,518.05	18,673.62	30,442.66	467,147.41	492,819.53
Nevada-California-Oregon Railway		1,755.26		5.20	19,594.66	23,584.98
Nevada Central Railroad					(*)	(*)
Nevada Copper Belt Railroad					3,080.25	7,694.37
Nevada Northern Railway					42,023.20	59,546.76
Nevada Transportation Company	8,672.42	10,619.72	491.00	228.31	(*)	(*)
Pioche Pacific Railroad					(*)	(*)
Silver Peak Railroad					(*)	(*)
Southern Pacific Company	801,941.36	1,426,011.72	383,038.90	476,524.91	4,045,142.02	6,274,579.61
Tonopah and Goldfield Railroad	4,768.51	4,361.90	1,366.86	1,267.88	14,586.41	11,322.99
Tonopah and Tidewater Railroad					8,639.00	8,477.70
Virginia and Truckee Railway					11,983.34	11,774.16
The Western Pacific Railroad	33,223.13	55,947.44	9,256.89	10,302.51	309,447.90	352,636.13
Totals	\$1,788,731.17	\$3,024,011.35	\$789,287.80	\$1,026,489.05	\$9,166,776.98	\$12,193,501.67

* Included in Trainmen account.

**OPERATING EXPENSES
TRANSPORTATION—RAIL-LINE**

Company	Fuel and power for train locomotives		Other train locomotive supplies and expenses		Trainmen	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$7,346,372.98	\$11,798,762.74	\$2,421,970.48	\$3,343,468.24	\$4,182,899.43	\$4,915,782.22
Bullfrog Goldfield Railroad	16,825.91	11,618.19	3,111.82	1,558.55	4,844.46	2,396.26
Central Pacific Railway						
Eureka Nevada Railway	14,599.41	8,970.13	3,180.43	2,246.34	6,180.43	3,447.84
Las Vegas and Tonopah Railroad	792,694.08	968,585.89	259,080.16	288,456.95	459,471.18	485,349.09
Los Angeles and Salt Lake Railroad	44,828.89	55,250.78	7,781.86	9,404.58	14,679.55	21,773.76
Nevada-California-Oregon Railroad	2,787.70	4,118.24	(b)	(b)	43,837.37	48,990.90
Nevada Central Railroad	6,306.25	18,437.43	1,555.90	2,379.71	3,064.46	10,115.46
Nevada Copper Belt Railroad	140,499.89	178,617.02	27,237.11	36,107.23	53,235.50	74,868.14
Nevada Northern Railway	3,878.34	4,199.60	(b)	(b)	43,666.12	51,628.80
Nevada Transportation Company	2,351.80	1,145.35	(b)	(b)	10,929.49	17,095.53
Pioche Pacific Railroad	740.91	677.06	(b)	(b)	22,070.70	17,217.41
Southern Pacific Company	8,444,864.01	15,121,709.37	1,790,461.91	2,123,679.23	4,593,015.75	5,723,868.78
Tonopah and Goldfield Railroad	38,458.41	33,240.95	11,119.15	10,822.01	17,721.75	14,363.59
Tonopah and Tidewater Railroad	24,738.60	25,832.59	9,960.74	7,787.82	8,877.74	8,363.44
Virginia and Truckee Railroad	24,277.20	24,259.95	8,438.88	3,456.71	12,541.05	19,468.73
The Western Pacific Railroad	694,356.04	935,323.54	122,652.53	149,586.97	327,309.95	371,237.97
Totals	\$17,597,472.57	\$29,067,868.83	\$4,665,905.07	\$5,961,800.39	\$9,662,888.93	\$11,660,663.90

^aIncludes road engines and motormen.

^bIncluded in Train Supplies and Expenses Account.

**OPERATING EXPENSES
TRANSPORTATION—RAIL-LINE**

Company	Train supplies and expenses		Injuries to persons		Loss and damage	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$1,426,416.63	\$1,677,292.78	\$533,289.69	\$620,350.62	\$518,219.08	\$948,013.12
Bullfrog Goldfield Railroad	988.84	674.73			98.81	486.21
Central Pacific Railroad						
Eureka Nevada Railway	1,491.87	943.36				91.39
Las Vegas and Tonopah Railroad	125,947.15	146,429.27	14,302.44	17,572.75	125.99	41,806.42
Los Angeles and Salt Lake Railroad	5,226.53	5,498.70	237.55	7,890.30	39,020.06	2,298.85
Nevada-California-Oregon Railway	*1,475.26	*1,518.42	98.00		7,708.32	62.78
Nevada Central Railroad	691.78	4,224.91	16.00		15.05	125.19
Nevada Copper Belt Railroad	10,225.67	14,270.87	844.57	3,453.60	75.07	627.03
Nevada Northern Railway	*2,196.45	*1,829.39	200.00	182.00	560.21	65.52
Nevada Transportation Company	*487.28	*505.97				
Pioche Pacific Railroad	*394.57	*208.90				
Silver Peak Railroad	1,411,893.61	1,557,924.79	300,549.84	270,941.14	427,422.22	842,753.63
Southern Pacific Company	2,756.62	2,562.83	621.35	1,112.87	533.36	908.79
Tonopah and Goldfield Railroad	7,017.43	3,149.26	1,038.29	146.28	124.48	24.27
Tonopah and Tidewater Railroad	4,066.46	4,114.23	237.85	126.80	496.80	490.95
Virginia and Truckee Railroad	65,764.77	74,532.09	8,217.40	4,820.70	45,200.66	61,041.03
The Western Pacific Railroad						
Totals	\$3,067,010.92	\$3,496,680.30	\$859,602.96	\$925,569.06	\$1,039,621.56	\$1,898,739.18

*Includes other train locomotive supplies.

**OPERATING EXPENSES
TRANSPORTATION—RAIL-LINE**

Company	Other casualty expenses		Other rail transportation expenses		Operating joint yards and terminals—Debit	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$245,415.15	\$337,752.11	\$1,123,432.10	\$1,339,752.00	\$506,006.69	\$599,590.16
Bullfrog Goldfield Railroad	496.54	436.21	773.20	782.21	1,430.60	1,412.25
Central Pacific Railroad						
Eureka Nevada Railway	463.28	232.47	1,007.14	887.53	528.00	528.00
Las Vegas and Tonopah Railroad	27,813.06	59,707.91	54,147.78	71,528.06	247,876.29	367,730.09
Los Angeles and Salt Lake Railroad	3,109.71	3,243.58	1,462.97	1,538.29		
Nevada-California-Oregon Railway	135.35		1,540.29	1,390.41		
Nevada Central Railroad	334.06	1,055.25	462.48	798.82		
Nevada Copper Belt Railroad	6,800.33	11,024.19	2,698.42	4,648.88	2,076.08	2,459.27
Nevada Northern Railroad	27.50	72.25	64.41	422.30	3,213.35	2,721.94
Nevada Transportation Company						
Pioche Pacific Railroad			9.88	10.83		
Silver Peak Railroad						
Southern Pacific Company	214,204.09	307,123.70	2,224,660.85	2,676,374.82	281,135.84	459,159.55
Tonopah and Goldfield Railroad	2,155.77	3,197.11	1,991.21	1,834.01	4,154.40	4,154.40
Tonopah and Tidewater Railroad	582.53	235.49	3,524.80	1,304.34	1,648.67	1,612.34
Virginia and Truckee Railroad	923.43	863.83	629.46	1,279.64		
The Western Pacific Railroad	21,034.21	27,117.09	147,983.90	166,303.68	47,712.97	75,701.55
Totals	\$523,496.06	\$752,151.19	\$3,564,333.89	\$4,269,156.22	\$1,076,782.89	\$1,514,959.55

OPERATING EXPENSES
TRANSPORTATION—RAIL-LINE

Company	Operating joint yards and terminals—Credit		Operating joint tracks and facilities—Debit		Operating joint tracks and facilities—Credit	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway.....	<i>\$143,536.46</i>	<i>\$162,006.62</i>	<i>\$94,513.78</i>	<i>\$106,516.16</i>	<i>\$303,286.88</i>	<i>\$246,979.94</i>
Bullfrog Goldfield Railroad.....						
Central Pacific Railroad.....						
Eureka Nevada Railroad.....						
Las Vegas and Tonopah Railroad.....	<i>2,802.35</i>	<i>2,802.35</i>				
Los Angeles and Salt Lake Railroad.....	<i>3,303.30</i>	<i>3,822.90</i>	<i>102,342.12</i>	<i>94,538.81</i>	<i>5,223.95</i>	<i>7,541.56</i>
Nevada-California-Oregon Railroad.....			<i>6,873.10</i>	<i>6,861.48</i>		
Nevada Central Railroad.....						
Nevada Copper Belt Railroad.....						
Nevada Northern Railroad.....						
Nevada Transportation Company.....						
Pioche Pacific Railroad.....						
Silver Peak Railroad.....						
Southern Pacific Company.....	<i>85,928.18</i>	<i>87,876.57</i>	<i>17,727.06</i>	<i>18,876.39</i>	<i>152,863.39</i>	<i>153,793.33</i>
Tonopah and Goldfield Railroad.....			<i>247.20</i>	<i>247.20</i>		
Tonopah and Tidewater Railroad.....	<i>997.86</i>			<i>2,183.31</i>		<i>1,019.21</i>
Virginia and Truckee Railroad.....			<i>2,928.63</i>	<i>1,125.96</i>		
The Western Pacific Railroad.....	<i>2,596.54</i>	<i>2,107.20</i>	<i>13,792.98</i>	<i>14,662.29</i>	<i>1,506.35</i>	<i>2,894.27</i>
Totals	<i>\$339,152.15</i>	<i>\$353,614.64</i>	<i>\$237,424.87</i>	<i>\$244,041.61</i>	<i>\$362,884.57</i>	<i>\$417,163.81</i>

Italic figures denote credit.

OPERATING EXPENSES
TRANSPORTATION RAIL-LINE, TRANSPORTATION WATER-LINE, AND MISCELLANEOUS OPERATIONS

Company	Transportation, rail line— Total		Transportation, water line— Total		Miscellaneous operations— Total	
	1916	1917	1916	1917	1916	1917
Archison, Topeka and Santa Fe Railway						
Bullfrog Goldfield Railroad	\$33,084,182.07	\$44,172,008.19			\$23,000.72	\$202,941.61
Central Pacific Railway	41,660.56	23,946.88				
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	37,064.78	23,963.49				
Los Angeles and Salt Lake Railroad	3,231,491.70	3,644,763.50				
Nevada-California-Oregon Railroad	127,622.96	160,609.76				
Nevada Central Railroad	16,234.35	19,111.80				
Nevada Copper Belt Railroad	24,167.11	85,821.70				
Nevada Northern Railway	363,671.52	476,821.71				
Nevada Transportation Company	13,922.87	16,187.86			976.62	1,334.98
Pioche Pacific Railroad	13,283.67	2,970.76				
Silver Peak Railroad	32,880,933.48	47,262,688.86	\$6,603,506.17	6,063,706.47	1,839,663.13	2,231,170.31
Southern Pacific Company	159,724.83	142,484.73				
Tonopah and Goldfield Railroad	81,047.33	76,077.81			10,315.13	
Tonopah and Tidewater Railroad	91,157.00	89,004.50				
Virginia and Truckee Railway						
The Western Pacific Railroad	2,410,134.84	2,968,341.53			116,687.48	148,023.82
Totals	\$72,629,862.25	\$99,176,450.39	\$6,603,506.17	\$6,063,706.47	\$2,222,418.69	\$2,861,773.37

OPERATING EXPENSES GENERAL EXPENSES

Company	Administration		Insurance—General		Valuation expenses	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway.....	\$1,721,289.37	\$1,901,900.38	\$495.22	\$2,705.23	\$274,598.59	\$287,876.32
Bullfrog Goldfield Railroad.....	7,060.35	5,026.62	18.00	18.00	1,245.26	316.12
Central Pacific Railroad.....						
Eureka Nevada Railway.....	10,334.00	11,390.28	27.00	27.00	3,738.03	1,572.10
Las Vegas and Tonopah Railroad.....	208,624.25	217,665.07	324.51	689.13	18,689.77	41,155.13
Nevada-California-Oregon Railroad.....	25,418.58	33,965.37	85.48	81.81	54.55	2,037.13
Nevada Central Railroad.....	2,786.08	2,728.28	28.25	44.88		725.15
Nevada Copper Belt Railroad.....	8,079.34	11,725.87	27.50	54.98	1,077.60	725.15
Nevada Northern Railroad.....	47,004.60	57,099.96	718.54	1,798.37	2,248.96	5,568.68
Nevada Transportation Company.....	11,661.83	9,164.75	143.33	57.12	2,500.00	5,441.05
Pioche Pacific Railroad.....	1,100.00	1,550.00	235.77	180.51		
Silver Peak Railroad.....	1,200.00	800.00				
Southern Pacific Company.....	2,151,705.28	2,308,980.75	3,173.65	3,645.03	199,388.63	272,901.96
Tonopah and Goldfield Railroad.....	28,752.01	24,843.20	202.35	237.48		
Tonopah and Tidewater Railroad.....	10,012.55	10,103.07	28.00	28.00	488.18	56.17
Virginia and Truckee Railroad.....	12,621.42	27,252.35	56.66	77.76	7,448.71	2,504.07
The Western Pacific Railroad.....	194,806.30	221,376.99	535.72	365.57	12,811.03	3,866.26
Totals.....	\$4,442,495.95	\$4,945,244.17	\$6,137.16	\$9,966.99	\$522,527.09	\$599,642.24

OPERATING EXPENSES GENERAL EXPENSES

Company	Other general expenses		General joint facility expenses—Debit		General joint facility expenses—Credit	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$419,377.95	\$508,282.37	\$32,211.43	\$31,409.90	\$974.17	\$576.81
Bullfrog Goldfield Railroad	476.90	2,196.27	18.00	18.00		
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	380.06	284.97	36.00	36.00	57.16	46.39
Los Angeles and Salt Lake Railroad	12,294.92	16,629.80	2,460.56	2,490.30	86.00	86.00
Nevada California-Oregon Railway	1,143.23	1,443.39				
Nevada Central Railroad	333.71	399.12				
Nevada Copper Belt Railroad	473.16	826.11				
Nevada Northern Railroad	5,001.69	3,940.82				
Nevada Transportation Company	1,187.53	340.49				
Pioche Pacific Railroad	228.00	619.35				
Silver Peak Railroad	6.62					
Southern Pacific Company	588,186.03	683,271.53	6,514.58	6,006.67		
Tonopah and Goldfield Railroad	3,287.01	2,569.04				
Tonopah and Tidewater Railroad	1,371.88	78.61	42.50	30.11		
Virginia and Truckee Railroad	1,094.94	1,856.28				
The Western Pacific Railroad	16,904.04	48,696.72	22.22	106.70		
Totals	\$1,060,717.55	\$1,240,705.65	\$41,805.29	\$40,095.68	\$1,067.33	\$639.20

Italic figures denote credit.

OPERATING EXPENSES
GENERAL EXPENSES, TOTAL OPERATING EXPENSES, AND RATIO OF OPERATING EXPENSES TO EARNINGS

Company	Total general expenses		Total operating expenses		Ratio of operating expenses to earnings—Per cent	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$2,446,988.39	\$2,711,498.94	\$972,896,804.55	\$888,504,049.77	59.96	62.78
Burlingame Railroad	8,806.51	7,574.91	103,609.93	87,177.51	76.84	76.25
Central Pacific Railway				4,486.70		
Eureka Nevada Railway	14,507.92	13,283.96	116,617.20	88,891.82	87.64	83.31
Las Vegas and Tonopah Railroad	242,348.01	278,694.48	b6,813,008.59	b7,731,225.65	58.45	60.56
Los Angeles and Salt Lake Railroad	26,702.14	37,517.70	c323,349.92	346,290.27	82.54	90.20
Nevada-California-Oregon Railway	3,148.04	3,794.33	34,379.20	36,411.72	73.43	53.45
Nevada Central Railroad	9,687.59	13,380.86	d56,553.37	1,111,134.14	57.26	44.25
Nevada Copper Belt Railroad	54,973.69	68,397.83	855,177.59	1,067,865.21	40.36	42.50
Nevada Northern Railroad	13,492.69	10,003.41	39,980.47	49,642.22	40.98	64.63
Nevada Transportation Company	1,560.77	2,349.86	20,136.19	15,796.01	76.64	90.94
Pioche Pacific Railroad	1,205.62	600.00	10,487.06	5,387.48	244.19	0.01
Southern Pacific Company	2,948,988.17	3,244,804.94	f76,249,254.97	190,961,278.68	62.77	64.21
Tonopah and Goldfield Railroad	82,456.03	27,614.59	361,006.16	311,717.00	56.18	49.83
Tonopah and Tidewater Railroad	11,943.11	10,138.74	e229,253.63	k199,184.49	46.34	42.43
Virginia and Truckee Railroad	21,225.73	31,199.49	213,008.73	211,123.89	81.92	76.17
The Western Pacific Railroad	224,123.31	274,311.54	4,960,622.41	16,190,055.24	59.86	62.54
Totals	\$6,082,115.72	\$6,734,995.53	\$183,272,243.96	\$196,916,176.70		

Notes refer to amounts credited to operating expenses on account of transportation for investment as follows:

\$183,620.52	\$1,977.42	\$464.21
b\$61,891.18	f\$337,663.76	k\$325,960.51
c\$1,461.59	d\$442,439.16	l\$148.84
d\$7.70	e\$63,788.86	g\$66,851.93

COMPARATIVE GENERAL BALANCE SHEET—ASSETS

Company	Total property investments		Investments in affiliated companies and other investments		Total current assets	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$615,790,166.19	\$625,725,865.80	\$116,648,117.67	\$131,230,438.70	\$60,984,273.72	\$71,913,474.55
Bullfrog Goldfield Railroad	1,937,321.33	1,846,339.37			36,681.56	66,345.28
Central Pacific Railroad	287,163,247.07	289,363,895.90	15,463,789.98	16,642,970.10	98,300.44	76,840.07
Eureka Nevada Railroad	484,361.20	494,361.20			34,318.81	37,734.31
Las Vegas and Tonopah Railroad	1,709,534.24	1,624,118.30	838,900.00	838,900.00	167,273.08	131,006.04
Los Angeles and Salt Lake Railroad	79,082,323.67	84,276,518.20	296,969.06	297,890.97	4,170,612.32	5,071,406.87
Nevada-California-Oregon Railroad	4,287,097.00	3,198,616.23	16,133.38	38,174.78	107,323.88	166,988.79
Nevada Central Railroad	1,905,350.00	1,606,860.00			23,746.09	31,710.77
Nevada Copper Belt Railroad	1,114,667.74	1,147,336.27			40,282.76	38,503.82
Nevada Northern Railroad	3,297,250.63	3,694,330.49			1,368,961.63	1,094,969.38
Nevada Transportation Company	15,966.70	18,468.46			21,966.32	17,236.26
Pioche Pacific Railroad	260,164.86	250,164.86			11,219.62	11,446.26
Silver Peak Railroad	64,970.62	64,636.22				
Southern Pacific Company	136,161,146.33	151,946,895.08	562,501,861.08	565,943,665.54	48,031,963.09	66,273,324.00
Tonopah and Goldfield Railroad	3,706,821.80	3,714,044.06			494,126.97	970,012.02
Tonopah and Tidewater Railroad	4,364,332.06	4,407,397.62	191,100.00	191,100.00	181,669.03	186,841.72
Virginia and Truckee Railroad	4,444,601.66	4,482,864.60			236,666.70	186,822.41
The Western Pacific Railroad	83,203,272.16	87,108,961.70	1,276,765.46	1,776,262.62	16,681,316.40	16,366,287.49
Totals	\$1,223,572,374.13	\$1,864,745,825.24	\$697,202,576.43	\$715,967,942.61	\$182,612,572.31	\$161,960,125.04

BALANCE SHEET—ASSETS

Company	Total deferred assets		Total unadjusted debits		Grand total assets	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway.....	\$5,294,782.17	\$5,614,128.98	\$1,388,159.78	\$1,003,392.52	\$800,055,499.43	\$885,497,270.55
Bullfinch Goldfield Railroad.....			586.76	1,904.41	1,974,439.06	1,974,439.06
Central Pacific Railway.....				1,121.86	302,120,257.09	304,973,817.92
Elgin Nevada Railway.....					2,121,430.01	2,121,430.01
Las Vegas and Tonopah Railroad.....			11,734.25	35,127.34	2,723,441.55	2,829,151.13
Los Angeles and Salt Lake Railroad.....		257,925.80	1,724,525.17	2,186,704.98	85,359,549.06	92,090,695.12
Nevada-California-Oregon Railway.....		1,286.71	6,020.13	6,708.40	4,397,949.10	3,412,772.91
Nevada Central Railroad.....	134,074.87		28,449	6,119.17	1,531,832.58	1,537,989.94
Nevada Comrade Belt Railroad.....	365,000.00	365,000.00	300,510.06	303,572.58	1,890,440.55	1,854,412.97
Nevada Northern Railroad.....			74,886.87	17,747.79	4,741,111.08	4,647,067.66
Nevada Transportation Company.....					37,983.02	35,763.71
Pioche Pacific Railroad.....					261,894.37	261,611.11
Silver Peak Railroad.....					64,970.62	64,626.22
Southern Pacific Company.....	6,018,595.66	5,400,271.70	6,944,239.01	9,863,096.78	769,657,853.12	797,452,243.60
Tonopah and Goldfield Railroad.....	909.00		22,963.03	26,618.65	4,224,530.80	4,216,457.08
Tonopah and Tidewater Railroad.....	389.10	8,964.27	44,468.50	15,185.58	4,751,988.69	4,753,589.09
Virginia and Truckee Railway.....	410.13	1,160.13		4,941.58	4,653,677.48	4,657,878.72
The Western Pacific Railroad.....	21,480.72	28,414.16	4,046,462.40	2,478,931.92	105,228,297.13	107,772,847.79
Totals.....	\$11,836,988.86	\$9,874,034.10	\$14,564,903.43	\$15,947,633.15	\$2,064,789,364.71	\$2,168,294,980.14

BALANCE SHEET—LIABILITIES

Company	Total stock		Government grants		Total long term debt	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$340,761,200.00	\$344,629,200.00			\$237,279,760.60	\$238,019,869.20
Bullfrog Goldfield Railroad	1,640,000.00	1,628,462.50			233,000.00	198,000.00
Central Pacific Railway	84,676,500.00	84,676,500.00			198,760,722.79	198,244,351.71
Eureka Nevada Railway	500,000.00	500,000.00				
Las Vegas and Tonopah Railroad	1,500,000.00	1,500,000.00				
Los Angeles and Salt Lake Railroad	25,000,000.00	25,000,000.00			57,063,000.00	59,022,000.00
Nevada-California-Oregon Railway	2,200,000.00	2,200,000.00			1,312,000.00	853,000.00
Nevada Central Railroad	750,000.00	750,000.00			750,000.00	750,000.00
Nevada Copper Belt Railroad	1,000,000.00	1,000,000.00			622,000.00	622,000.00
Nevada Northern Railway	2,000,000.00	2,000,000.00			100,000.00	
Nevada Transportation Company	2,500.00	2,500.00				
Pioche Pacific Railroad	250,000.00	250,000.00				
Silver Peak Railroad	200,000.00	200,000.00				
Southern Pacific Company	272,822,906.64	272,523,406.64			308,384,672.91	291,370,412.77
Tonopah and Goldfield Railroad	2,150,000.00	2,150,000.00			200,000.00	
Tonopah and Tidewater Railroad	1,000,000.00	1,000,000.00			4,634,111.87	4,544,110.60
Virginia and Truckee Railway	5,000,000.00	5,000,000.00			17,085,280.00	20,000,000.00
The Western Pacific Railroad	76,000,000.00	76,000,000.00				
Totals	\$816,442,106.64	\$820,309,068.14			\$879,414,623.17	\$860,619,364.18

BALANCE SHEET—LIABILITIES

Company	Total current liabilities		Total deferred liabilities		Total unadjusted credits	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$20,734,609.29	\$34,136,959.60	\$192,826.18	\$290,067.10	\$34,927,652.13	\$47,256,845.46
Bullfrog Goldfield Railroad	54,713.28	42,303.87			44,763.35	33,106.06
Central Pacific Railroad	3,216,479.20	3,988,136.24			7,475,255.02	9,089,472.03
Eureka Nevada Railway						4,495.70
Las Vegas and Tonopah Railroad	1,579,848.60	1,457,742.41	3,488.55	3,127.92	84,247.63	48,612.63
Los Angeles and Salt Lake Railroad	2,517,820.33	5,420,997.14	25,832.09	24,923.41	2,086,996.21	2,407,111.86
Nevada-California-Oregon Railway	65,624.62	82,305.56	48.00	1,908.70	225,354.15	190,404.49
Nevada Central Railroad	1,264.20	2,207.47			10,740.02	13,466.84
Nevada Copper Belt Railroad	282,950.14	225,914.99			57,673.51	82,076.97
Nevada Northern Railway	1,053,134.20	456,925.87			843,949.09	1,288,200.63
Nevada Transportation Company	25,005.15	28,005.15			57.59	377.00
Pioche Pacific Railroad	1,811.03	855.22				
Silver Peak Railroad		11,847.17			3,352.40	4,182.72
Southern Pacific Company	16,550,885.53	20,135,103.26	96,354.28	114,025.63	49,174,335.44	72,266,282.31
Tonopah and Goldfield Railroad	71,210.81	123,883.24			297,130.40	333,947.69
Tonopah and Tidewater Railroad	73,952.43	66,647.13	4,668.00	4,196.20	43,096.40	46,812.42
Virginia and Truckee Railway	22,010.30	21,475.18			83,186.57	91,591.68
The Western Pacific Railroad	1,293,881.96	2,719,560.73	101,388.67	98,163.52	10,314,022.74	8,127,077.42
Totals	\$47,545,001.06	\$68,968,879.73	\$424,610.77	\$536,406.48	\$106,624,917.85	\$141,304,065.61

BALANCE SHEET—LIABILITIES

Company	Total appropriated surplus		Profit and loss		Grand total liabilities	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$74,125,999.12	\$87,970,844.89	\$32,043,452.11	\$33,193,364.30	\$300,055,499.43	\$335,497,270.55
Bullfrog Goldfield Railroad	198.00	125,198.00	1,810.02	1,077,490.87	1,974,489.45	1,914,589.06
Central Pacific Railroad	5,598,585.35	5,964,247.89	5,080,745.13	6,001,610.06	302,720,287.49	304,973,817.92
Eureka Nevada Railroad			18,680.01	17,589.81	518,680.01	522,086.51
Las Vegas and Tonopah Railroad			440,145.23	350,531.73	2,727,441.55	2,623,151.13
Los Angeles and Salt Lake Railroad	21,659.66	1,575,298.91	1,266,892.80	1,259,646.80	85,388,506.09	92,080,885.12
Nevada-California-Oregon Railroad	530,819.43	517,069.14	64,014.90	431,899.48	4,397,861.10	3,412,772.91
Nevada Central Railroad			22,378.36	22,313.63	1,534,392.58	1,537,969.94
Nevada Copper Belt Railroad			142,182.10	85,573.69	1,820,440.55	1,864,412.97
Nevada Northern Railroad			585,867.15	684,302.06	4,741,111.08	4,647,067.66
Nevada Transportation Company	158,160.59	207,639.10	10,400.28	4,871.56	37,963.02	35,763.71
Pioche Pacific Railroad			9,573.34	1,572.11	261,384.37	252,427.33
Silver Peak Railroad			196,864.30	151,403.67	64,970.82	64,636.22
Southern Pacific Company	34,483.89	39,498.89	117,694,105.43	140,553,620.10	759,467,583.12	797,462,343.60
Tonopah and Goldfield Railroad	920,000.00	1,120,118.11	596,189.59	488,496.04	4,224,030.30	4,216,457.06
Tonopah and Tidewater Railroad		1,592.96	972,840.01	909,769.14	4,781,968.99	4,753,589.09
Virginia and Truckee Railroad			451,519.39	455,182.14	4,653,677.48	4,667,878.72
The Western Pacific Railroad	4,631.45	8,344.96	1,429,307.32	1,819,701.15	105,228,297.13	107,772,847.79
Totals	\$81,304,547.49	\$97,529,887.87	\$153,976,171.41	\$178,916,154.38	\$2,084,789,364.71	\$2,108,286,776.36

NOTE: Discrepancy in footings of grand total liabilities and grand total assets due to figures reported by Pioche Pacific Railroad (1917).
Italic figures denote deficit.

EMPLOYEES AND THEIR COMPENSATION YEAR ENDING DECEMBER 31, 1917

Class of employees	Average number during year	Number of hours worked	Total compensation
Atchison, Topeka and Santa Fe Railway—			
General officers, \$3,000 per annum and upwards	133	*39,808	\$1,021,138
General officers, below \$3,000 per annum	55	*16,769	138,196
Division officers, \$3,000 per annum and upwards	45	*14,502	196,312
Division officers, below \$3,000 per annum	140	*43,373	312,774
Clerks, \$900 per annum and upwards	3,080	8,622,029	3,774,414
Clerks, below \$900 per annum	2,336	6,337,553	1,661,218
Messengers and attendants	322	*109,574	540,414
Assistant engineers and draftsmen	486	*147,227	1,291,123
M. W. and S. foremen	290	*95,379	904,369
Section foremen	1,409	*458,758	1,867,212
General foremen, M. E. department	66	*20,237	212,385
Gang and other foremen, M. E. department	629	*213,385	1,867,212
Machinists	1,061	3,558,212	618,212
Boilermakers	361	1,206,534	212,385
Blacksmiths	144	416,286	11,239
Masons and bricklayers	10	21,289	7,226
Structural-iron workers	6	17,297	277,440
Carpenters	2,177	6,519,099	341,178
Painters and upholsterers	275	765,470	613,737
Electricians	342	*112,226	1,154,389
Airbrake men	186	550,236	5,491,638
Car inspectors	510	1,958,737	2,636,243
Car repairers	972	3,251,394	18,544,518
Other skilled laborers	986	3,067,408	973,773
Mechanics' helpers and apprentices	4,066	13,544,518	1,154,389
Sectionmen	10,876	29,992,116	5,491,638
Other unskilled laborers	3,540	11,618,877	2,636,243
Traveling agents and solicitors	147	*42,063	243,773
Employees in outside agencies	88	*24,670	18,544
Other traffic employees	28	*7,649	44,323
Train dispatchers and directors	180	515,458	68,081
Telegraphers, telephoners, and block operators	794	2,501,653	104,444
Telegraphers and telephoners operating interlockers	138	423,322	68,081
Levermen (nontelegraphers)	88	328,969	77,444
Telegrapher-clerks	784	2,528,545	643,583
Agent-telegraphers	584	2,158,179	583,444
Station agents (nontelegraphers)	336	*127,506	44,323
Station masters and assistants	12	*4,336	13,544
Station-service employees	2,628	8,627,050	1,963,212
Yardmasters	107	*38,685	212,385
Yardmasters' assistants (not yard clerks)	39	*13,807	77,444
Yard engineers and motormen	379	1,268,647	704,444
Yard firemen and helpers	391	1,276,779	44,323
Yard conductors (or foremen)	413	1,282,116	643,583
Yard brakemen (switchmen or helpers)	871	2,597,136	1,204,323
Yard switch-tenders	29	104,003	2,636
Other yard employees	42	136,645	2,636
Hostlers	250	986,139	277,440
Engine-house men	1,704	6,335,005	1,396,312
Road freight engineers and motormen	803	2,707,844	2,043,823
Road freight firemen and helpers	832	2,760,633	1,328,196
Road freight conductors	702	2,439,793	1,627,197
Road freight brakemen and flagmen	1,453	5,068,480	2,197,444
Road passenger engineers and motormen	403	956,836	1,058,444
Road passenger firemen and helpers	396	946,050	643,583
Road passenger conductors	311	787,170	638,196
Road passenger baggagemen	9	32,715	11,239
Road passenger brakemen and flagmen	383	981,867	443,823
Other road train employees	146	313,046	116,312
Crossing flagmen and gatemen	184	*57,518	100,444
Drawbridge operators	13	*5,657	11,239
Floating equipment employees	282	591,087	222,385
Policemen and watchmen	335	*131,750	345,444
Other transportation employees	137	*46,622	161,312
All other employees	45	*14,436	30,444
Totals	50,654	140,086,192	\$52,266,192
		*1,785,976	

*Total number of days on duty during the year.

EMPLOYEES AND THEIR COMPENSATION—Continued

Class of employees	Average number during year	Number of hours worked	Total compensation
Bullfrog Goldfield Railroad—			
Section foremen	4	*1,502	\$4,288.96
Boilermakers	1	3,680	1,804.84
Sectionmen	8	34,760	6,979.06
Telegrapher-clerks	1	4,745	1,500.00
Station agents (nontelegraphers)	1	*366	2,100.00
Station-service employees		442	110.71
Hostlers		371	110.12
Totals	15	43,978	\$16,873.71
*All joint employees of the Las Vegas and Tonopah Railroad are included in report of that company.			
Las Vegas and Tonopah Railroad—			
General officers, \$3,000 per annum and upwards	4	*1,126	\$11,499.96
General officers, below \$3,000 per annum	4	*1,188	6,175.00
Clerks, \$900 per annum and upwards	8	17,477	10,520.40
Clerks, below \$900 per annum	2	3,375	540.00
M. W. and S. foremen	1	*366	1,323.67
Section foremen	4	*1,327	3,346.20
Gang and other foremen, M. E. department	1	*366	1,700.00
Carpenters	1	2,975	994.33
Painters and upholsterers		48	24.25
Car repairers	1	2,210	643.54
Mechanics' helpers and apprentices		2,939	867.39
Sectionmen	10	33,001	6,386.52
Other unskilled laborers	1	3,134	691.87
Traveling agents and solicitors	3	*786	2,750.00
Train dispatchers and directors	2	6,570	3,144.67
Telegrapher-clerks	1	4,745	1,080.00
Station agents (nontelegraphers)	1	*366	1,380.00
Station-service employees	1	3,533	120.00
Engine-house men		310	54.25
Road freight engineers and motormen	2	4,225	4,449.74
Road freight firemen and helpers	2	4,225	2,800.00
Road freight conductors	2	3,963	8,982.86
Road freight brakemen and flagmen	2	3,963	2,974.34
All other employees	2	*732	780.00
Totals	55	97,083	\$68,228.99
Los Angeles and Salt Lake Railroad—			
General officers, \$3,000 per annum and upwards	24	*8,118	\$131,580.21
General officers, below \$3,000 per annum	18	*6,620	39,783.39
Division officers, \$3,000 per annum and upwards	3	*991	11,100.00
Division officers, below \$3,000 per annum	26	*9,048	52,821.27
Clerks, \$900 per annum and upwards	329	852,640	378,200.54
Clerks, below \$900 per annum	111	280,222	71,147.04
Messengers and attendants	20	7,225	12,100.43
Assistant engineers and draftsmen	40	*12,524	50,123.44
M. W. and S. foremen	22	*8,125	30,888.55
Section foremen	127	*45,683	121,477.80
General foremen, M. E. department	1	*366	1,800.00
Gang and other foremen, M. E. department	46	*16,671	72,101.39
Machinists	95	337,299	149,644.61
Boilermakers	65	216,715	95,561.03
Blacksmiths	17	53,353	24,158.81
Masons and bricklayers	1	1,580	971.65
Carpenters	67	213,305	68,088.94
Painters and upholsterers	28	87,438	27,692.50
Electricians	8	*3,307	11,411.90
Airbrake men	5	15,903	4,922.70
Car inspectors	33	141,680	44,210.47
Car repairers	106	386,376	115,834.45
Other skilled laborers	79	282,430	96,925.88
Mechanics' helpers and apprentices	217	805,068	226,755.65
Sectionmen	674	2,272,656	480,339.12
Other unskilled laborers	244	*377,536	213,569.51
Foremen of construction gangs and work trains	7	33,074	10,488.49
Other men in construction gangs and work trains	95	349,156	95,576.38
Traveling agents and solicitors	54	*15,641	90,926.74
Other traffic employees	6	*1,087	5,310.00
Train dispatchers and directors	13	39,807	27,918.58
Telegraphers, telephoners and block operators	40	129,697	45,542.30
Telegraphers and telephoners operating interlockers	7	21,382	6,429.47
Levermen (nontelegraphers)	5	23,436	4,713.49

*Total number of days on duty during the year.

EMPLOYEES AND THEIR COMPENSATION—*Continued*

Class of employees	Average number during year	Number of hours worked	Total compensation
LOS ANGELES AND SALT LAKE RAILROAD—Continued			
Telegrapher-clerks	40	133,547	\$4,818
Agent-telegraphers	44	173,616	5,818
Station agents (nontelegraphers)	19	*7,085	2,357
Station masters and assistants	1	*365	122
Station-service employees	95	391,955	13,065
Yardmasters	4	*1,481	494
Yard engineers and motormen	20	67,909	2,297
Yard firemen and helpers	20	67,909	2,297
Yard conductors (or foremen)	21	69,619	2,321
Yard brakemen, switchmen or helpers	43	133,678	4,519
Other yard employees	5	21,246	711
Hostlers	17	71,292	2,376
Engine-house men	122	480,328	16,171
Road freight engineers and motormen	79	221,386	7,479
Road freight firemen and helpers	81	219,247	7,438
Road freight conductors	67	184,543	6,191
Road freight brakemen and flagmen	132	378,908	12,731
Road passenger engineers and motormen	55	106,808	3,594
Road passenger firemen and helpers	56	106,808	3,594
Road passenger conductors	36	94,914	3,197
Road passenger baggage men	34	90,558	3,079
Road passenger brakemen and flagmen	65	166,312	5,577
Other road train employees	4	24,080	803
Crossing flagmen and gatemen	14	*5,482	1,827
Drawbridge operators	2	*764	255
Policemen and watchmen	14	*5,086	1,695
All other employees	109	*42,202	1,413
Totals	3,830	10,620,596	\$4,818
Nevada-California-Oregon Railway—			
General officers, \$3,000 per annum and upwards	2	*780	260
General officers, below \$3,000 per annum	5	*3,059	1,019
Division officers, below \$3,000 per annum	3	*1,087	362
Clerks, \$900 per annum and upwards	9	29,830	1,004
Clerks, below \$900 per annum	2	6,272	211
Messengers and attendants	2	*530	177
Assistant engineers and draftsmen	2	*505	168
M. W. and S. foremen		*144	48
Section foremen	14	*4,257	1,419
Gang and other foremen, M. E. department	3	5,584	186
Machinists	9	19,782	663
Boilermakers	1	2,586	86
Blacksmiths	1	4,250	142
Carpenters	5	50,114	1,671
Painters and upholsterers	1	3,906	129
Car inspectors	2	5,618	187
Car repairers	5	14,951	502
Other skilled laborers	4	7,749	258
Mechanics' helpers and apprentices	18	94,232	3,145
Sectionmen	50	121,882	4,063
Other unskilled laborers	6	37,549	1,252
General foremen, M. E. department	2	5,964	199
Masons and bricklayers	11	20,489	683
Traveling agents and solicitors		38	13
Other traffic employees		31	10
Train dispatchers and directors	1	2,920	97
Agent-telegraphers	8	2,973	99
Station agents (nontelegraphers)	5	*1,845	61
Station-service employees	2	629	21
Hostlers	6	1,534	51
Road freight engineers and motormen	7	25,999	867
Road freight firemen and helpers	7	26,104	870
Road freight conductors	6	25,994	867
Road freight brakemen and flagmen	7	26,256	875
Road passenger engineers and motormen	1	2,867	95
Road passenger conductors	1	2,997	100
Telegrapher-clerks	1	1,335	44
Yard engineers and motormen	2	3,981	133
Yard firemen and helpers	2	3,976	132
Yard brakemen (switchmen or helpers)	1	2,932	98
All other employees	2	*387	13
Totals	216	508,667	\$25,021

*Total number of days on duty during the year.

EMPLOYEES AND THEIR COMPENSATION—Continued

Class of employees	Average number during year	Number of hours worked	Total compensation
Nevada Central Railroad—			
General officers, \$3,000 per annum and upwards.....	1	*365	\$4,500.00
General officers, below \$3,000 per annum.....	2	*368	960.00
Clerks below \$900 per annum.....	1	1,880	472.00
Section foremen.....	4	*1,222	3,441.70
Mechanics' helpers and apprentices.....	3	4,797	1,560.50
Sectionmen.....	8	17,780	4,730.05
Telegraphers, telephoners, and block operators.....	1	2,232	897.50
Station agents (nontelegraphers).....	1	*312	1,526.60
Station-service employees.....	1	5,570	1,706.05
Engine-house men.....	1	3,650	1,095.00
Lead enginemen and motormen.....	3	4,952	2,743.60
Lead firemen and helpers.....	1	1,368	522.25
Lead conductors.....	1	1,320	703.15
All other employees.....	1	*177	498.70
Totals.....	30	45,366	\$25,362.10
		*2,442	
Nevada Copper Belt Railroad—			
General officers, below \$3,000 per annum.....	1.60	*584	\$5,735.00
Division officers, below \$3,000 per annum.....	1.75	*610	4,500.00
Clerks, \$900 per annum and upwards.....	4.50	11,296	5,724.53
Clerks, below \$900 per annum.....	6.00	10,143	3,550.00
Assistant engineers and draftsmen.....	.50	59	375.00
Section foremen.....	2.25	*914	2,807.87
General foremen, M. E. department.....	1.00	*344	2,056.00
Machinists.....	.50	627	323.99
Boilermakers.....	1.00	3,185	1,696.66
Carpenters.....	.50	834	448.38
Car repairers.....	.75	2,780	971.82
Mechanics' helpers and apprentices.....	1.50	5,490	2,174.60
Section men.....	7.00	26,386	7,166.54
Other unskilled laborers.....	3.00	7,339	2,703.47
Train dispatchers and directors.....	1.00	2,920	1,580.00
Agent-telegraphers.....	4.00	15,010	4,149.34
Hostlers.....	1.00	3,700	1,180.42
Lead freight engineers and motormen.....	1.75	7,840	3,445.87
Lead freight firemen and helpers.....	1.75	7,133	2,624.99
Lead freight conductors.....	1.75	7,066	3,213.33
Lead freight brakemen and flagmen.....	3.50	14,136	5,244.94
Lead passenger engineers and motormen.....	1.00	3,937	1,526.71
Lead passenger conductors.....	1.00	3,727	1,565.82
Policemen and watchmen.....	1.50	*540	120.00
Blacksmiths.....	.75	3,100	1,519.96
Totals.....	50.85	136,249	\$66,515.23
		*3,061	
Nevada Northern Railway—			
General officers, \$3,000 per annum and upwards.....	2.00	*616	\$19,000.00
General officers, below \$3,000 per annum.....	5.00	*1,540	9,000.00
Division officers, \$3,000 per annum and upwards.....	3.00	*924	14,100.00
Division officers, below \$3,000 per annum.....	2.00	*673	4,215.00
Clerks, \$900 per annum and upwards.....	22.00	54,062	31,585.80
Clerks, below \$900 per annum.....	1.50	2,164	720.00
Messengers and attendants.....	2.00	*730	1,895.00
Assistant engineers and draftsmen.....	5.00	*1,492	7,680.20
M. W. and S. foremen.....	1.50	*510	2,688.15
Section foremen.....	20.25	*7,293	20,789.50
Gang and other foremen, M. E. department.....	3.00	*1,065	5,719.15
Machinists.....	11.50	36,514	24,104.60
Boilermakers.....	5.50	16,326	11,363.15
Blacksmiths.....	1.50	5,407	3,582.90
Carpenters.....	6.00	19,536	12,924.65
Painters and upholsterers.....	2.50	6,337	3,704.10
Electricians.....	1.00	*308	2,065.00
Airbrake men.....	1.00	2,453	1,853.65
Car inspectors.....	7.00	29,284	9,932.55
Car repairers.....	19.50	68,170	22,496.33
Other skilled laborers.....	9.50	31,848	17,192.19
Mechanics' helpers and apprentices.....	21.50	60,394	26,495.00
Sectionmen.....	82.50	290,762	72,555.10
Other unskilled laborers.....	14.75	54,734	22,062.49
Foremen of construction gangs and work trains.....	.50	2,013	1,258.35
Other men in construction gangs and work trains.....	22.50	95,112	27,996.65
Train dispatchers and directors.....	3.00	8,760	5,580.00
Telegrapher-clerks.....	2.25	5,975	2,813.90
Agent-telegraphers.....	4.75	11,740	6,233.85
Station agents (nontelegraphers).....	2.25	*747	3,835.00

*Total number of days on duty during the year.

EMPLOYEES AND THEIR COMPENSATION—Continued

Class of employees	Average number during year	Number of hours worked	Total compensation
NEVADA NORTHERN RAILWAY—Continued			
Station-service employees.....	10.25	26,748	\$9,880.1
Yard engineers and motormen.....	1.50	8,565	5,791.9
Yard firemen and helpers.....	1.50	8,596	4,236.6
Yard conductors (or foremen).....	2.50	12,315	7,130.15
Yard brakemen (switchmen or helpers).....	3.00	16,865	8,977.5
Other yard employees.....	1.00	3,650	1,016.7
Hostlers.....	2.50	10,214	3,671.15
Engine-house men.....	13.25	55,756	15,467.4
Road freight engineers and motormen.....	7.50	38,063	26,315.8
Road freight firemen and helpers.....	7.50	38,117	19,254.8
Road freight conductors.....	7.50	35,100	22,761.5
Road freight brakemen and flagmen.....	15.50	71,341	36,146.5
Road passenger engineers and motormen.....	5.75	15,707	10,383.5
Road passenger firemen and helpers.....	5.75	15,710	7,542.6
Road passenger conductors.....	5.75	15,016	5,081.5
Road passenger baggagemen.....	4.75	11,388	6,015.6
Road passenger brakemen and flagmen.....	4.75	13,781	849.6
Other road train employees.....	1.00	3,650	1,029.0
Policemen and watchmen.....	1.00	*365	
Totals.....	388.50	1,211,708	\$397,464.3
		*16,283	
Nevada Transportation Company (Eureka Nevada Railway)			
General officers, \$3,000 per annum and upwards.....	1	*365	\$6,000.0
General officers, below \$3,000 per annum.....	4	*1,460	3,136.0
Division officers, below \$3,000 per annum.....	3	*810	3,450.0
Clerks, below \$900 per annum.....	1	362	321.0
Section foremen.....	3	*365	2,730.0
Machinists.....	1	2,680	1,736.0
Blacksmiths.....	1	2,610	897.0
Car repairers.....	1	1,080	360.0
Mechanics' helpers and apprentices.....	1	710	151.0
Sectionmen.....	2	5,360	1,661.0
Other unskilled laborers.....	5	14,770	4,577.0
Station agents (nontelegraphers).....	2	627	1,827.0
Engine-house men.....	1	2,650	60.0
Road engineers and motormen.....	1	2,340	1,227.0
Road firemen and helpers.....	1	2,340	1,061.0
Road freight conductors.....	1	2,340	1,287.0
Totals.....	27	37,842	\$37,786.0
		*4,198	
Pioche Pacific Railroad—			
General officers, \$3,000 per annum and upwards.....	1	Part time	\$1,550.0
Clerks, below \$900 per annum.....	1	Part time	60.0
General foremen, M. mechanic.....	1	Part time	1,300.0
Boilermakers.....	.50	359	314.0
Sectionmen.....	1.25	2,699	1,261.5
Engine-house men.....			1,601.0
Road freight engineers and motormen.....	1.25	3,357	1,720.0
Road freight firemen and helpers.....	1.25	3,132	1,475.0
Road freight brakemen and flagmen.....	1.25	2,669	1,250.0
All other employees.....			1,760.0
Totals.....	7.50	12,186	\$12,662.0
Silver Peak Railroad—			
General officers, below \$3,000 per annum.....	2	*730	\$1,200.0
Agent-telegraphers.....	1	1,320	664.0
Road engineers and motormen.....	1	768	540.0
Road firemen and helpers.....	1	336	134.0
Road conductors.....	1	776	487.0
Totals.....	6	3,200	\$3,981.0
		*730	
Southern Pacific Company—			
General officers, \$3,000 per annum and upwards.....	119	*44,061	\$1,050,576.0
General officers, below \$3,000 per annum.....	42	*15,134	88,824.0
Division officers, \$3,000 per annum and upwards.....	47	*16,000	166,400.0
Division officers, below \$3,000 per annum.....	218	*81,582	465,560.0
Clerks, \$900 per annum and upwards.....	3,565	9,690,680	4,511,670.0
Clerks, below \$900 per annum.....	1,425	3,263,680	801,740.0
Messengers and attendants.....	248	*81,453	163,636.0
Assistant engineers and draftsmen.....	355	*113,305	499,335.0
M. W. and S. foremen.....	270	*84,711	411,495.0
Section foremen.....	990	*338,987	1,661,285.0
General foremen, M. E. department.....	44	*14,576	76,836.0

*Total number of days on duty during the year.

EMPLOYEES AND THEIR COMPENSATION—Continued

Class of employees	Average number during year	Number of hours worked	Total compensation
SOUTHERN PACIFIC COMPANY—Continued			
Gang and other foremen, M. E. department	734	*254,978	\$1,066,495.99
Machinists	953	2,814,635	1,362,279.98
Boilermakers	281	843,085	414,669.31
Blacksmiths	273	781,811	373,464.62
Masons and bricklayers	11	36,562	13,682.70
Structural iron workers	2	5,033	3,027.34
Carpenters	1,652	5,057,680	1,919,886.57
Painters and upholsterers	361	985,622	380,468.73
Electricians	352	*123,748	438,710.67
Airbrake men	130	388,565	151,703.11
Car inspectors	531	2,024,991	693,730.20
Car repairers	731	2,442,829	783,265.18
Other skilled laborers	2,299	7,141,406	2,691,298.57
Mechanics' helpers and apprentices	3,660	10,791,755	3,427,732.10
Sectionmen	6,990	23,444,477	4,609,091.27
Other unskilled laborers	2,887	9,287,937	2,577,607.88
Foremen of construction gangs and work trains	22	61,216	24,608.26
Other men in construction gangs and work trains	200	585,165	112,045.62
Traveling agents and solicitors	119	*37,117	188,984.87
Employees in outside agencies	41	*11,643	47,802.08
Other traffic employees	2	*1,048	3,809.50
Train dispatchers and directors	152	445,924	298,984.40
Telegraphers, telephoners and block operators	307	905,545	354,943.33
Telegraphers and telephoners operating interlockers	3	8,773	3,771.65
Levermen (nontelegraphers)	158	537,001	162,641.47
Telegrapher-clerks	452	1,395,409	513,982.13
Agent-telegraphers	455	1,599,816	530,026.62
Station agents (nontelegraphers)	258	*94,538	347,567.88
Station masters and assistants	23	*8,068	37,891.66
Station service employees	4,577	14,218,999	4,595,511.71
Yardmasters	68	*25,353	148,666.02
Yardmasters' assistants (not yard clerks)	49	*19,530	122,098.98
Yard engineers and motormen	320	1,019,770	562,760.77
Yard firemen and helpers	330	1,012,831	354,312.49
Yard conductors (or foremen)	316	1,014,013	524,376.05
Yard brakemen (switchmen or helpers)	831	2,606,817	1,263,073.27
Yard switch tenders	62	236,351	74,417.40
Other yard employees	72	279,170	58,201.90
Hostlers	107	439,082	121,153.61
Engine-house men	1,251	4,739,903	1,196,019.75
Road freight engineers and motormen	898	2,683,796	2,062,044.93
Road freight firemen and helpers	902	2,693,636	1,213,318.99
Road freight conductors	642	1,969,823	1,257,484.65
Road freight brakemen and flagmen	1,698	5,098,440	2,587,306.23
Road passenger engineers and motormen	492	1,208,253	1,177,133.97
Road passenger firemen and helpers	351	819,157	563,411.94
Road passenger conductors	444	1,138,092	856,211.67
Road passenger baggage men	90	265,994	122,872.68
Road passenger brakemen and flagmen	702	1,584,760	831,399.77
Other road train employees	70	123,890	57,345.24
Crossing flagmen and gatemen	361	*146,395	207,736.12
Drawbridge operators	47	*16,365	41,140.63
Floating equipment employees	1,994	6,656,556	1,908,845.23
Policemen and watchmen	486	*180,188	511,088.85
Other transportation employees	11	*3,726	21,571.90
All other employees	1,470	*465,294	953,960.18
Totals	49,998	184,229,415	\$56,331,227.88
Tonopah and Goldfield Railroad—			
General officers, \$3,000 per annum and upwards	5	*1,570	\$32,800.00
General officers, below \$3,000 per annum	5	*1,570	5,400.00
Division officers, below \$3,000 per annum	2	*730	5,100.00
Clerks, \$900 per annum and upwards	13	33,856	23,629.23
Clerks, below \$900 per annum	1	2,504	600.00
Messengers and attendants	1	*365	390.00
Section foremen	7	*2,191	8,640.00
Gang and other foremen, M. E. department	1	*865	2,040.00
Machinists	14	5,991	3,594.60
Boilermakers	1	3,825	2,295.00
Blacksmiths	1	3,337	2,092.20
Carpenters	1	3,829	2,140.92
Electricians	1	*139	680.00
Car repairers	2	8,387	3,643.65
Mechanics' helpers and apprentices	13	6,444	2,498.23
Other skilled laborers	1	9	4.00
Sectionmen	174	67,602	17,077.15

*Total number of days on duty during the year.

EMPLOYEES AND THEIR COMPENSATION—Continued

Class of employees	Average number during year	Number of hours worked	com
TONOPAH AND GOLDFIELD RAILROAD—Continued			
Other unskilled laborers	51	18,509	
Traveling agents and solicitors	2	*628	
Train dispatchers and directors	1	2,920	
Telegrapher-clerks	24	7,568	
Agent-telegraphers	14	4,384	
Station-agents (nontelegraphers)	14	*546	
Station-service employees	3	8,392	
Yard engineers and motormen	1	2,454	
Yard firemen and helpers	1	2,408	
Yard conductors (or foremen)	1	2,379	
Yard brakemen (switchmen or helpers)	2	4,704	
Hostlers	2	7,519	
Engine-house men		386	
Road freight engineers and motormen	24	8,373	
Road freight firemen and helpers	24	8,783	
Road freight conductors	24	7,761	
Road freight brakemen and flagmen	54	15,821	
Road passenger engineers and motormen	4	381	
Road passenger firemen and helpers	4	374	
Road passenger conductors	4	384	
Road passenger brakemen and flagmen	1	767	
Crossing flagmen and gatemen	1	*365	
Policemen and watchmen	2	*768	
All other employees	3	*139	
Totals	109	240,051	
		*9,374	
Tonopah and Tidewater Railroad—			
General officers, \$3,000 per annum and upwards	4	*1,528	
General officers, below \$3,000 per annum	3	*722	
Division officers, below \$3,000 per annum	3	*1,095	
Clerks, \$900 per annum and upwards	10	25,068	
Clerks, below \$900 per annum	2	4,261	
M. W. and S. foremen	1	*410	
Section foremen	10	*3,205	
Machinists	4	17,155	
Boilermakers	2	5,596	
Blacksmiths	1	3,237	
Carpenters	3	11,063	
Painters and upholsterers	1	3,277	
Electricians	1	*363	
Car inspectors	1	3,214	
Car repairers		1,059	
Other skilled laborers		801	
Mechanics' helpers and apprentices	4	10,783	
Sectionmen	33	106,867	
Other unskilled laborers	5	12,774	
Traveling agents and solicitors	2	*618	
Other traffic employees	2	*770	
Train dispatchers and directors	1	3,024	
Agent-telegraphers	5	14,464	
Station-service employees	1	2,920	
Yardmasters		84	
Hostlers	1	995	
Engine-house men	2	9,815	
Road freight engineers and motormen	2	7,188	
Road freight firemen and helpers	2	7,185	
Road freight conductors	2	6,897	
Road freight brakemen and flagmen	2	6,894	
Policemen and watchmen		*40	
All other employees	5	*1,483	
Totals	115	264,567	
		*10,318	
Virginia and Truckee Railway—			
General officers, \$3,000 per annum and upwards	1	*365	
General officers, below \$3,000 per annum	6	*2,465	
Clerks, \$900 per annum and upwards	4	7,144	
Clerks, below \$900 per annum	2	4,872	
Assistant engineers and draftsmen	1	*244	
Section foremen	9	*3,285	
Machinists	5	13,086	
Boilermakers	1	2,530	
Blacksmiths	1	2,504	
Carpenters	4	15,234	
Painters and upholsterers	2	5,283	
Electricians		*140	
Car inspectors	2	7,382	
Other skilled laborers	4	7,903	
Mechanics' helpers and apprentices	7	19,252	

*Total number of days on duty during the year.

EMPLOYEES AND THEIR COMPENSATION—Continued

Class of employees	Average number during year	Number of hours worked	Total compensation
GINIA AND TRUCKEE RAILWAY—Continued			
Sectionmen	25	87,348	\$21,178.98
Other unskilled laborers	1	8,070	868.33
Train dispatchers and directors	2	6,552	3,858.55
Agent-telegraphers	3	10,950	3,180.00
Station agents (nontelegraphers)	2	*653	2,400.00
Station-service employees	6	16,814	4,424.70
Engine-house men	4	14,606	4,564.27
Road freight engineers and motormen	2	8,513	4,415.00
Road freight firemen and helpers	2	8,363	3,020.49
Road freight conductors	2	8,266	3,353.00
Road freight brakemen and flagmen	4	14,638	4,844.91
Road passenger engineers and motormen	2	6,309	3,072.50
Road passenger firemen and helpers	1	4,138	1,313.37
Road passenger conductors	2	6,354	2,492.00
Road passenger brakemen and flagmen	4	14,125	1,219.53
Policemen and watchmen	3	*1,096	3,178.75
Totals	111	285,231	\$137,722.90
		*8,277	
Western Pacific Railroad—			
General officers, \$3,000 per annum and upwards	13	*4,107	\$97,524.89
General officers, below \$3,000 per annum	13	*4,106	28,258.90
Division officers, \$3,000 per annum and upwards	2	*612	7,200.00
Division officers, below \$3,000 per annum	16	*5,786	32,437.30
Clerks, \$900 per annum and upwards	280	728,612	321,137.55
Clerks, below \$900 per annum	58	148,178	38,280.85
Messengers and attendants	9	*3,334	6,730.70
Assistant engineers and draftsmen	43	13,076	48,991.95
M. W. and S. foremen	24	*8,346	34,918.65
Section foremen	128	*46,007	114,087.14
General foremen, M. E. department	2	*713	3,687.60
Gang and other foremen, M. E. department	18	*8,371	33,900.80
Machinists	35	140,647	63,984.60
Boilermakers	18	81,486	38,070.60
Blacksmiths	12	45,610	18,834.85
Carpenters	171	499,202	172,992.05
Painters and upholsterers	10	28,720	10,315.15
Electricians	11	*6,574	17,444.80
Airbrake men	4	15,680	5,207.90
Car inspectors	22	131,374	39,761.90
Car repairers	58	217,145	63,179.30
Other skilled laborers	26	142,903	42,409.02
Mechanics' helpers and apprentices	179	607,698	175,826.62
Sectionmen	514	2,819,830	471,822.45
Other unskilled laborers	326	923,637	251,868.18
Traveling agents and solicitors	31	*8,990	50,450.63
Other traffic employees		*168	275.00
Train dispatchers and directors	18	40,044	23,280.85
Telegraphers, telephoners and block operators	59	195,127	61,977.65
Levermen (nontelegraphers)	8	31,508	6,458.10
Telegrapher-clerks	6	14,906	6,549.40
Agent-telegraphers	50	193,438	49,809.50
Station agents (nontelegraphers)	17	*6,590	24,067.50
Station masters and assistants	1	*365	1,020.00
Station-service employees	90	307,791	82,575.32
Yardmasters	7	*2,660	9,851.00
Yardmasters' assistants (not yard clerks)	2	*568	1,965.75
Yard engineers and motormen	15	53,471	29,493.60
Yard firemen and helpers	15	54,221	18,747.30
Yard conductors (or foremen)	15	53,826	26,521.40
Yard brakemen (switchmen or helpers)	30	106,839	51,180.00
Other yard employees	2	11,157	6,779.90
Hostlers	8	69,465	21,626.85
Engine-house men	31	170,798	39,460.40
Road freight engineers and motormen	66	200,375	163,712.75
Road freight firemen and helpers	66	202,775	105,842.25
Road freight conductors	55	186,201	125,812.20
Road freight brakemen and flagmen	118	366,924	180,656.35
Road passenger engineers and motormen	26	50,447	65,736.65
Road passenger firemen and helpers	25	50,492	42,434.35
Road passenger conductors	19	48,579	40,061.45
Road passenger brakemen and flagmen	37	97,084	47,123.60
Crossing flagmen and gatemen	22	*7,680	14,168.75
Floating equipment employees	51	189,353	63,738.20
Policemen and watchmen	11	*3,929	8,628.00
All other employees	90	*29,328	50,626.10
Road passenger baggagemen		41	6.90
Totals	2,958	8,723,514	\$3,554,906.95
		*161,310	

*Indicates number of days worked during year.

GENERAL STATISTICS

Company	Number of revenue passen- gers carried		Number of revenue passen- gers carried one mile		Average miles carried— Revenue passengers	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	11,623,424	11,831,966	1,186,064,682	1,353,862,521	101.90	114.42
Bullfrog Goldfield Railroad	6,903	4,834	500,112	366,784	72.45	75.88
Central Pacific Railroad						
Eureka Nevada Railway	4,244	3,180	430,637	322,454	101.47	101.40
Las Vegas and Tonopah Railroad	1,197,232	1,768,623	118,314,473	140,636,715	96.82	80.06
Los Angeles and Salt Lake Railroad	23,869	22,524	1,765,631	1,734,323	73.97	77.00
Nevada-California-Oregon Railroad	1,899	1,847	146,722	151,819	77.25	82.24
Nevada Central Railroad	7,482	11,705	106,482	174,016	14.23	14.87
Nevada Copper Belt Railroad	368,577	442,524	6,483,043	7,850,156	17.51	13.22
Nevada Northern Railway	1,666	1,631	84,677	85,985	50.82	56.13
Nevada Transportation Company						
Pioche Pacific Railroad	320	110	5,600	1,925	17.50	17.50
Silver Peak Railroad						
Southern Pacific Company	39,063,934	42,137,171	1,384,964,319	1,512,303,753	32.13	35.89
Tonopah and Goldfield Railroad	24,431	21,499	1,612,226	1,480,375	66.86	66.83
Tonopah and Tidewater Railroad	8,880	9,510	847,358	899,609	96.96	94.60
Virginia and Truckee Railroad	72,032	85,497	1,837,141	2,276,463	25.50	23.63
The Western Pacific Railroad	193,679	239,444	47,972,564	70,455,435	247.69	294.37
Totals	62,694,632	56,589,565	2,720,115,617	3,082,562,299		

GENERAL STATISTICS

Company	Average revenue per passenger		Average revenue per passenger mile		Passenger-service train revenue per mile of road	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$2.96097	\$2.61220	\$0.02219	\$0.02233	\$3,933.90	\$4,537.32
Bullfrog Golf and Country Club Railroad	3.74596	4.01642	.06171	.06236	336.72	286.06
Central Pacific Railway						
Eureka Nevada Railway	5.00385	5.33323	.04931	.05186	253.36	192.24
Las Vegas and Tonopah Railway	2.47021	1.37323	.02500	.02471	3,123.87	3,494.76
Nevada-California and South Lake Railroad	3.63827	3.84594	.04919	.05403	140.08	133.37
Nevada-California and Oregon Railway	5.92733	6.96332	.07671	.08406	120.53	207.01
Nevada Central Railroad	1.35471	1.19731	.00819	.00954	327.64	523.13
Nevada Central Belt Railroad	3.37763	4.2139	.02271	.02420	1,123.34	1,344.29
Nevada Northern Railway	5.21107	5.35725	.10232	.06444	103.36	112.61
Nevada Transportation Company						
Pioche Pacific Railroad	1.47740	1.51353	.06425	.10364	269.60	44.53
Silver Peak Railroad	7.02715	7.38773	.02187	.02198	4,698.53	5,520.22
Southern Pacific Company	3.38350	3.49286	.05147	.05335	1,073.25	994.44
Tonopah and Goldfield Railroad	4.98515	5.06302	.03195	.03352	332.46	364.12
Tonopah and Tidewater Railroad	8.0080	8.92938	.03454	.03512	1,175.34	1,361.59
Virginia and Truckee Railway			.02184	.02091	1,411.46	1,737.70
The Western Pacific Railroad	5.41098	6.15400				

GENERAL STATISTICS

Company	Passenger-service train revenue per train mile		Revenue freight—Tons		Revenue freight—Ton-miles	
	1916	1917	1916	1917	1916	1917
Achison, Topeka and Santa Fe Railway.....	\$1.51	\$1.75	28,694,989	31,320,927	9,050,401,108	10,789,599,945
Bullfrog Goldfield Railroad.....	.68	.92	44,050	84,189	3,043,874	2,446,619
Central Pacific Railroad.....						
Eureka Nevada Railroad.....	.41	.57	29,673	25,047	3,314,729	2,790,773
Las Vegas and Tonopah Railroad.....	1.57	1.81	3,731,202	3,984,823	671,490,448	722,502,535
Los Angeles and Salt Lake Railroad.....	.64	.49	70,457	83,388	6,419,394	7,252,802
Nevada-California-Oregon Railroad.....	1.44	1.16	5,678	15,108	434,441	632,332
Nevada Central Railroad.....	.34	.60	45,561	361,806	1,023,313	7,147,564
Nevada Copper Belt Railroad.....	.96	1.25	4,748,111	5,216,032	141,558,727	160,457,592
Nevada Northern Railroad.....	.51	.56	18,125	14,908	755,202	762,681
Nevada Transportation Company.....			22,820	14,102	241,658	146,662
Pioche Pacific Railroad.....	.12	.07	1,561	1,638	24,098	28,665
Silver Peak Railroad.....						
Southern Pacific Company.....	1.39	1.65	25,904,496	28,574,928	7,422,946,748	9,233,610,428
Tonopah and Goldfield Railroad.....	1.63	1.53	257,769	243,378	10,022,736	8,638,664
Tonopah and Tidewater Railroad.....	.56	.58	119,567	121,632	14,315,703	13,003,277
Virginia and Truckee Railroad.....	.69	.80	116,366	125,190	4,620,664	4,841,281
The Western Pacific Railroad.....	1.00	1.23	1,777,682	2,329,118	1,020,082,624	1,186,336,845
Totals.....			66,588,097	72,466,215	18,350,655,467	22,140,128,663

GENERAL STATISTICS

Company	Revenue freight—Average miles hauled		Average revenue per ton of freight		Average revenue per ton-mile of freight	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	315.40	344.49	\$2.96327	\$3.15449	\$0.00946	\$0.00916
Bullfrog Goldfield Railroad	69.10	71.56	2.11109	2.56974	.03065	.03591
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	111.71	106.63	3.37638	3.05924	.03022	.02817
Los Angeles and Salt Lake Railroad	179.97	181.31	2.04309	2.09806	.01135	.01139
Nevada-California-Oregon Railroad	91.11	86.98	3.67556	3.09086	.04034	.03554
Nevada Central Railroad	76.54	41.86	4.85311	3.03331	.06338	.07282
Nevada Copper Belt Railroad	22.46	19.76	1.74530	.59063	.07770	.02963
Nevada Northern Railway	29.81	30.76	4.0341	.42950	.01353	.01411
Nevada Transportation Company	41.72	51.16	3.58016	4.21495	.06594	.08240
Pioche Pacific Railroad	11.07	10.39	1.14629	1.23222	.10776	.11842
Silver Peak Railroad	15.45	17.50	1.81000	2.96700	.11729	.16850
Southern Pacific Company	286.55	323.14	2.84546	3.04585	.00933	.00943
Tonopah and Goldfield Railroad	38.88	35.49	1.96276	2.00269	.06048	.06642
Tonopah and Tidewater Railroad	119.73	106.91	3.67113	3.34106	.03066	.03125
Virginia and Truckee Railroad	39.71	38.67	1.47821	1.42708	.03723	.03590
The Western Pacific Railroad	573.82	508.35	3.79200	3.12135	.00681	.00671

GENERAL STATISTICS

Company	Freight revenue per mile of road		Freight revenue per train mile		Operating revenue per mile of road	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$9,912.09	\$11,432.29	\$4.06	\$4.24	\$14,077.46	\$16,312.63
Bullfrog Goldfield Railroad	1,073.96	1,014.68	1.86	3.27	1,567.12	1,820.36
Central Pacific Railway						
Eureka Nevada Railway	843.26	645.06	1.36	1.82	1,119.99	842.54
Las Vegas and Tonopah Railroad	6,608.29	7,128.76	4.39	4.51	10,104.96	11,064.69
Los Angeles and Salt Lake Railroad	946.39	996.87	1.82	.97	1,480.86	1,886.36
Nevada-California-Oregon Railway	296.24	492.16	1.83	2.74	1,601.81	1,780.39
Nevada Central Railroad	1,917.33	5,115.49	6.27	6.53	2,389.62	6,066.43
Nevada Copper Belt Railroad	11,601.92	18,717.87	7.16	7.84	12,886.34	16,217.44
Nevada Northern Railway	772.61	1,082.94	2.73	3.02	976.99	907.83
Nevada Transportation Company	1,642.67	1,086.13	4.90	4.58	1,642.67	1,086.13
Pioche Pacific Railroad	161.46	277.71	.27	.97	246.74	239.32
Silver Peak Railroad	10,447.04	12,266.21	5.17	5.34	15,567.12	18,333.96
Southern Pacific Company	4,660.76	4,237.78	6.87	6.87	8,768.01	6,516.37
Tonopah and Goldfield Railroad	2,583.98	2,403.62	3.90	3.77	2,981.26	2,776.32
Tonopah and Tidewater Railroad	2,549.10	2,647.64	2.91	2.91	3,863.14	4,162.06
Virginia and Truckee Railway	7,156.96	8,283.23	3.66	4.04	8,779.57	10,301.68
The Western Pacific Railroad						

GENERAL STATISTICS

Company	Operating revenue per train mile		Operating expenses per mile of road		Operating expenses per train mile	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$2.96	\$3.23	\$5,440.63	\$10,240.78	\$1.77	\$2.03
Bullfrog Goldfield Railroad	2.66	4.26	1,196.56	1,006.78	2.06	3.25
Central Pacific Railroad						
Eureka Nevada Railway	1.73	2.61	981.55	701.80	1.52	2.09
Las Vegas and Tonopah Railroad	2.92	3.18	5,905.97	6,684.40	1.71	1.92
Los Angeles and Salt Lake Railroad	1.60	1.27	1,181.10	1,258.78	1.32	1.14
Nevada-California-Oregon Railroad	3.27	4.03	3,868.48	3,800.28	2.41	2.15
Nevada Central Railroad	1.69	3.74	1,339.62	2,679.87	.97	1.65
Nevada Copper Belt Railroad	4.60	5.39	5,179.76	6,467.92	1.86	2.29
Nevada Northern Railway	3.41	3.66	4,775.96	5,886.78	1.68	2.38
Nevada Transportation Company	4.90	4.85	1,258.51	988.50	3.75	4.42
Pioche Pacific Railroad	4.06	1.06	599.83	304.48	9.92	1.07
Southern Pacific Company	2.97	3.33	9,479.22	11,476.34	1.80	2.08
Tonopah and Goldfield Railroad	5.02	7.23	3,193.91	2,748.68	3.27	3.60
Tonopah and Tidewater Railroad	4.35	4.35	1,351.97	1,178.12	1.97	1.85
Virginia and Truckee Railway	2.09	2.29	3,156.55	3,128.69	1.72	1.72
The Western Pacific Railroad	2.61	2.97	5,255.38	6,442.14	1.56	1.86

GENERAL STATISTICS

Company	Operating revenue or deficit per mile of road		Average number of passengers per car mile		Average number of passengers per train mile	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$5,136.88	\$6,071.86	12.87	14.48	52.50	59.47
Bullfrog Goldfield Railroad	960.66	313.58	9.78	13.70	9.94	13.67
Central Pacific Railroad						
Eureka Nevada Railway	138.44	140.65	5.76	8.08	5.80	8.06
Las Vegas and Tonopah Railroad	4,198.99	4,860.19	11.94	14.12	61.48	63.02
Los Angeles and Salt Lake Railroad	249.76	186.63	4.84	3.92	8.96	7.12
Nevada-California-Oregon Railway	134.89	340.12	1.01	.94	1.02	.90
Nevada Central Railroad	1,000.00	3,376.61	2.88	4.82	2.88	4.82
Nevada Copper Belt Railroad	7,655.55	8,749.62	16.18	21.06	33.54	44.23
Nevada Northern Railway	487.89	322.22	4.89	4.91	4.51	5.04
Nevada Transportation Company	363.63	98.32				
Pioche Pacific Railroad	352.55	644.23	.53	.85	.53	.88
Silver Peak Railroad	6,117.40	6,860.62	14.42	16.31	51.57	61.37
Southern Pacific Company	2,885.10	2,787.79	10.76	9.70	21.60	19.36
Tonopah and Goldfield Railroad	1,662.52	1,683.19	1.25	5.45	8.40	8.32
Tonopah and Tidewater Railroad	1,662.52	1,683.19	1.25	5.45	8.40	8.32
Virginia and Truckee Railway	1,662.52	1,683.19	1.25	5.45	8.40	8.32
The Western Pacific Railroad	3,623.46	3,963.46	8.27	11.01	18.57	19.36
					36.10	51.76

Italic figures denote deficit.

GENERAL STATISTICS

Company	Average number of passenger cars per train mile		Average number of tons of freight per loaded car mile		Average number of tons of freight per train mile	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	6.84	6.87	17.75	19.05	429.40	463.01
Bullfrog Goldfield Railroad	2.00	1.01	19.72	19.11	60.68	91.18
Central Pacific Railroad						
Eureka Nevada Railway	2.00	1.01	17.19	18.65	44.81	68.22
Las Vegas and Tonopah Railroad	6.40	6.70	19.91	21.60	396.54	395.96
Los Angeles and Salt Lake Railroad	3.50	1.00	7.52	7.34	37.61	27.25
Nevada-California-Oregon Railway	1.01	.96	7.75	8.66	30.33	37.82
Nevada Central Railroad	1.00	1.00	19.59	34.97	79.55	290.25
Nevada Copper Belt Railroad	2.68	2.67	44.38	44.12	528.14	554.71
Nevada Northern Railway	1.08	1.03	7.21	10.22	32.57	44.79
Nevada Transportation Company			12.45	14.50	45.01	40.98
Pioche Pacific Railroad	1.00	1.00	33.37	30.58	2.27	568.61
Silver Peak Railroad	6.45	5.74	20.86	22.41	525.93	568.61
Southern Pacific Company	3.50	2.94	23.96	23.13	137.88	104.05
Tonopah and Goldfield Railroad	1.30	1.53	26.08	26.64	123.85	120.62
Tonopah and Tidewater Railroad	2.82	2.97	21.71	22.28	77.89	78.84
Virginia and Truckee Railway	6.91	6.83	22.55	25.48	558.35	601.69
The Western Pacific Railroad						

GENERAL STATISTICS

Company	Average number of loaded cars per train mile		Average number of empty cars per train mile		Average mileage operated during year	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	26.81	26.62	9.57	10.43	8,636.42	8,642.32
Bullfrog Goldfield Railroad	3.08	4.77	2.07	2.99	86.59	86.59
Central Pacific Railroad						
Eureka Nevada Railway	2.61	3.66	1.88	2.37	118.81	118.81
Las Vegas and Tonopah Railroad	20.00	18.86	7.03	6.87	1,153.58	1,154.88
Los Angeles and Salt Lake Railroad	10.25	6.56	7.79	3.91	273.77	275.11
Nevada-California-Oregon Railroad	3.92	4.36	2.83	3.01	98.30	98.30
Nevada Central Railroad	4.06	6.58	2.83	5.54	41.47	41.47
Nevada Copper Belt Railroad	11.90	12.57	9.76	10.88	165.10	165.10
Nevada Northern Railway	3.51	4.38	2.63	1.70	84.00	84.00
Nevada Transportation Company	3.63	2.82	1.29	1.91	16.00	16.00
Pioche Pacific Railroad	.07	.02	.06	.02	17.50	17.50
Southern Pacific Company	26.84	26.66	10.41	10.53	6,979.02	7,091.19
Tonopah and Goldfield Railroad	10.25	7.14	7.74	6.37	113.42	113.41
Tonopah and Tidewater Railroad	7.08	7.50	3.90	3.13	189.57	189.07
Virginia and Truckee Railroad	3.76	3.77	2.36	1.82	67.48	67.48
The Western Pacific Railroad	24.54	23.64	6.81	8.26	942.01	960.87

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Grain		Flour		Other mill products	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	2,561,425	1,659,546	616,815	573,951	338,771	329,866
Bullfrog Goldfield Railroad	174	159	355	344	31	111
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	37	62	329	235	55	109
Los Angeles and Salt Lake Railroad	51,347	50,097	14,145	12,291	18,690	23,554
Nevada-California-Oregon Railway	2,669	1,960	329	449	15	133
Nevada Central Railroad						
Nevada Copper Belt Railroad	557	670	145	259		
Nevada Northern Railway	860	917	1,251	1,595	17	70
Nevada Transportation Company						
Nevada Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	1,048,171	1,039,901	148,397	144,942	349,113	138,995
Tonopah and Goldfield Railroad	1,173	813	943	973	43	138
Tonopah and Tidewater Railroad	2,185	1,838	343	216	216	136
Virginia and Truckee Railroad	59,040	105,400	12,881	11,213	10,652	432
The Western Pacific Railroad						7,547
Totals	3,728,068	2,831,988	796,160	746,396	718,123	549,621

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Hay		Tobacco		Ootton	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	476,519	582,991			72,991	68,733
Bullfrog Goldfield Railroad	82	56				
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	16					
Los Angeles and Salt Lake Railroad	19,543	17,733				
Nevada-California-Oregon Railway	337	3,381	824	114	16	2,527
Nevada Central Railroad						
Nevada Copper Belt Railroad						
Nevada Northern Railway	45	404				
Nevada Transportation Company	605	563				
Pioche Pacific Railroad						
Southern Pacific Company	502,554	473,484	14,749	23,511	55,353	54,923
Tonopah and Goldfield Railroad	2,440	2,128				
Tonopah and Tidewater Railroad		4,176				
Virginia and Truckee Railway	4,987	4,814				
The Western Pacific Railroad	27,513	20,544	7,627	7,132	11,880	17,139
Totals	1,084,524	1,055,974	22,700	30,807	139,945	138,827

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Fruit and vegetables		Other products of agriculture		Total products of agriculture	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	1,478,586	1,563,337	318,845	380,646	5,863,632	5,112,370
Bullfrog Goldfield Railroad	1,832	1,619			2,574	2,239
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	1,941	1,533			2,378	1,939
Los Angeles and Salt Lake Railroad	224,336	254,369	8,632	14,964	338,923	376,279
Nevada-California-Oregon Railway	481	676	178	481	4,039	7,100
Nevada Central Railroad					363	481
Nevada Copper Belt Railroad	5,641	6,737			6,239	8,070
Nevada Northern Railway	2,162	2,538	125	184	5,028	6,167
Nevada Transportation Company					1,224	722
Pioche Pacific Railroad						
Silver Peak Railroad					43	19
Southern Pacific Company	3,111,660	3,227,015	142,555	350,964	5,372,857	5,503,640
Tonopah and Goldfield Railroad	2,162	1,898	179		7,012	5,565
Tonopah and Tidewater Railroad		16			614	547
Virginia and Truckee Railroad	1,199	1,068	15	156	9,065	8,765
The Western Pacific Railroad	141,773	130,459	26,919	22,247	296,290	331,731
Totals	4,971,763	5,191,680	497,448	789,672	11,910,351	11,365,634

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Live Stock		Dressed Meats		Other packing-house products	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	1,196,997	1,388,828	62,165	55,356	76,980	71,543
Bullfrog Goldfield Railroad	204	378				
Central Pacific Railroad						
Eureka Nevada Railway	387	685				
Las Vegas and Tonopah Railroad	46,561	50,013	1,073	683	2,761	3,812
Nevada-California-Oregon Railroad	24,806	25,747				
Nevada-Central Railroad						
Nevada Copper Belt Railroad	2,166	2,674				
Nevada Northern Railway	6,412	3,662			14	25
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	507,223	573,006	32,487	32,484	58,948	57,225
Tonopah and Goldfield Railroad	270	322	388	35	148	54
Tonopah and Tidewater Railroad	70	156				
Virginia and Truckee Railroad	10,878	8,063				
The Western Pacific Railroad	35,455	56,700	96	283	7,506	4,673
Totals	1,831,379	2,115,261	96,204	88,861	146,337	137,332

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Poultry, game, and fish		Wool		Hides and leather	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	19,931	15,035	24,656	16,456	10,830	12,599
Bullfrog Goldfield Railroad						
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad						
Los Angeles and Salt Lake Railroad						
Nevada-California-Oregon Railway						
Nevada Central Railroad	4,691	11,292	5,079	5,424	3,085	2,719
Nevada Copper Belt Railroad			1,026	1,033	27	
Nevada Northern Railway			71	53		
Nevada Transportation Company			333	333	85	112
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	52,360	61,126	31,676	15,740	25,430	23,833
Tonopah and Goldfield Railroad						
Tonopah and Tidewater Railroad						
Virginia and Truckee Railroad	5,871	10,817	363	369		
The Western Pacific Railroad			12,070	4,470	6,340	12,065
Totals	82,863	96,333	75,279	43,918	45,797	56,353

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Other products of animals		Total products of animals		Anthracite coal	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	177,732	186,837	1,669,371	1,750,643	66,620	28,329
Bullfrog Goldfield Railroad	53	68	262	446		
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	20	68	377	763		136
Los Angeles and Salt Lake Railroad		16,890	79,466	90,848		
Nevada-California-Oregon Railway	20		25,879	26,800	112	
Nevada Central Railroad			2,354	1,330		
Nevada Copper Belt Railroad			2,227	2,727		
Nevada Northern Railway	20	26	6,969	4,178		
Nevada Transportation Company			785	1,265		
Poche Pacific Railroad						
Silver Peak Railroad			18	2		
Southern Pacific Company	210,061	299,625	918,185	1,088,015	3,225	4,070
Tonopah and Goldfield Railroad	177	137	978	548	40	
Tonopah and Tidewater Railroad			70	166		
Virginia and Truckee Railroad			11,244	8,462	20	22
The Western Pacific Railroad	5,855	8,551	78,223	97,584	2,452	5,722
Totals	410,202	481,102	2,691,236	3,023,707	71,469	36,879

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Bituminous coal		Coke		Ores	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	3,596,476	4,163,359	390,803	534,578	4,912,947	5,306,965
Bullfrog Goldfield Railroad	4,277	6,064	102	135	7,421	1,230
Central Pacific Railway						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	5,165	5,983	78	54	5,231	2,113
Los Angeles and Salt Lake Railroad	323,105	479,379	66,739	66,945	1,520,860	1,139,625
Nevada-California-Oregon Railway	1,309	2,244			659	385
Nevada Central Railroad						
Nevada Copper Belt Railroad	1,755	3,734			22,403	321,115
Nevada Northern Railway	119,744	188,941	683	876	4,087,320	4,701,923
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	385,895	572,463	172,031	304,731	1,237,522	1,407,040
Tonopah and Goldfield Railroad	7,722	8,533	255	196	122,706	167,398
Tonopah and Tidewater Railroad	337	507	51	86	20,907	27,610
Virginia and Truckee Railway	4,613	5,294			713	556
The Western Pacific Railroad	354,083	463,105	14,473	21,671	79,578	105,790
Totals	4,794,192	5,899,516	645,295	932,330	11,748,397	13,241,676

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Stone, sand, etc.		Other products of mines		Total products of mines	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	1,776,161	1,678,866	2,328,513	2,906,549	13,080,519	14,676,716
Bullfrog Goldfield Railroad	755	38	164	305	12,719	7,792
Central Pacific Railroad						
Eureka Nevada Railroad	37	25	74	164	10,615	8,349
Las Vegas and Tonopah Railroad	544,762	489,402	86,238	270,873	2,241,864	2,419,260
Los Angeles and Salt Lake Railroad	322	275	1,010	688	3,300	3,562
Nevada-California-Oregon Railroad					1,156	9,967
Nevada Central Railroad	1,184	8,678			25,343	333,627
Nevada Copper Belt Railroad	67,864	82,002	338	15,186	4,225,949	45,011,953
Nevada Northern Railway					10,643	11,004
Nevada Transportation Company					16,760	10,141
Pioche Pacific Railroad					748	106
Silver Peak Railroad						
Southern Pacific Company	4,208,625	3,925,377	2,483,064	2,759,582	8,510,356	8,973,293
Tonopah and Goldfield Railroad	1,878	543	489	183	182,590	176,843
Tonopah and Tidewater Railroad	1,076	1,197	86,294	80,624	107,655	110,024
Virginia and Truckee Railway	297	3,471	59,361	61,941	64,584	71,382
The Western Pacific Railroad	79,364	280,694	20,277	43,008	550,002	929,560
Totals	6,661,845	6,450,063	5,064,647	6,189,103	29,635,152	32,753,824

*Includes 23,024 tons of bullion copper.

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Lumber		Other forest products		Total forest products	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	1,046,908	1,229,482	384,437	391,752	1,431,345	1,621,234
Bullfrog Goldfield Railroad	1,668	929		226	1,668	1,155
Central Nevada Railway						
Elgin Nevada Railway						
Las Vegas and Tonopah Railroad	1,760	516			1,760	516
Los Angeles and Salt Lake Railroad	410,193	385,383	4,708	9,291	414,901	404,674
Nevada-California-Oregon Railroad	17,730	19,442	5,402	11,109	23,132	30,551
Nevada Central Railroad						
Nevada Copper Belt Railroad	3,838	5,615	166	266	4,004	5,882
Nevada Northern Railway	15,592	39,296	11		15,603	39,296
Nevada Transportation Company					15,346	210
Pioche Pacific Railroad					230	229
Silver Peak Railroad					510	8
Southern Pacific Company	3,810,336	4,438,421	550,060	705,332	4,360,466	5,143,753
Tonopah and Goldfield Railroad	22,892	17,760	1,599	1,168	24,491	18,928
Tonopah and Tidewater Railroad	776	510	1,965	1,633	2,641	2,183
Virginia and Truckee Railway	4,090	4,874	6,042	5,905	10,132	10,679
The Western Pacific Railroad	113,139	128,767	12,479	20,992	125,618	148,719
Totals	5,449,022	6,280,296	966,789	1,147,324	6,417,395	7,429,109

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Petroleum and other oils		Sugar		Naval stores	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	1,188,476	1,643,520	284,256	372,196		
Burlingame and Santa Fe Railway	5,566	6,468	97	201		
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	3,049	1,793	77	201		
Los Angeles and Salt Lake Railroad	62,743	43,780	60,169	62,346		215
Nevada-California-Oregon Railway	1,559	1,821	196	199		
Nevada Central Railroad						
Nevada Copper Belt Railroad	1,294	1,109				
Nevada Northern Railway	64,155	98,091	322	431		
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	646,777	841,971	458,587	533,331	882	21,459
Tonopah and Goldfield Railroad	13,264	16,468	200	242		
Tonopah and Tidewater Railroad	1,408	627	21			
Virginia and Truckee Railroad	5,814	7,046		19		
The Western Pacific Railroad	116,970	136,313	83,203	87,965	302	576
Totals	2,076,073	2,792,966	877,123	1,042,699	1,239	22,249

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Iron—Pig and bloom		Iron and steel rails		Other castings and machinery	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railroad	89,660	124,089	42,649	69,299	575,016	817,976
Burlingame Goldfield Railroad	51		6,912	314	722	1,567
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	25		115	253	329	472
Los Angeles and Salt Lake Railroad	21,310	23,185	11,560	9,982	48,075	61,154
Nevada-California-Oregon Railroad					130	269
Nevada Central Railroad						
Nevada Copper Belt Railroad						
Nevada Northern Railway			269	121	433	637
Nevada Transportation Company	603	1,210	460	609	2,272	6,154
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company						
Tonopah and Goldfield Railroad	175,372	82,654	39,185	46,798	871,355	445,782
Tonopah and Tidewater Railroad	141		180	208	1,005	1,582
Virginia and Truckee Railroad			131	108	521	700
The Western Pacific Railroad	7,359	19,185	13,533	11,834	456	621
Totals	294,621	250,472	115,014	140,145	1,063,625	1,391,022

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Other products of animals		Total products of animals		Anthracite coal	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	177,732	185,837	1,569,271	1,750,643	65,630	26,929
Bullfrog Goldfield Railroad	53	63	282	445		
Central Pacific Railroad						
Eureka Nevada Railway		63	377	753		
Las Vegas and Tonopah Railroad	20		79,446	90,548		
Los Angeles and Salt Lake Railroad	16,239	16,890	25,879	26,970	112	136
Nevada-California-Oregon Railway	20		2,824	1,330		
Nevada Central Railroad			2,327	2,727		
Nevada Copper Belt Railroad			6,969	4,173		
Nevada Northern Railway	20	26	785	1,235		
Nevada Transportation Company						
Pioche Pacific Railroad			18	2		
Silver Peak Railroad						
Southern Pacific Company	210,961	269,525	913,155	1,038,015	3,235	4,070
Tonopah and Goldfield Railroad	177	137	978	548	40	
Tonopah and Tidewater Railroad			70	156		
Virginia and Truckee Railway			11,244	8,452	20	22
The Western Pacific Railroad	5,895	8,551	73,223	97,534	2,452	5,722
Totals	410,302	481,102	2,691,238	3,023,757	71,469	36,879

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Wagons, carriages, tools, etc.		Wines, liquors, and beers		Household goods and furniture	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	145,656	196,632	139,145	157,464	108,634	113,691
Bullfrog Goldfield Railroad	29	29	1,220	962		16
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	8	12	617	401		
Los Angeles and Salt Lake Railroad	15,636	18,122	16,049	17,770	13,346	6,647
Nevada-California-Oregon Railway	32	172	59	24		
Nevada Central Railroad						
Nevada Copper Belt Railroad		26	232	426		
Nevada Northern Railway		207	2,570	4,658	44	
Nevada Transportation Company	44					
Norfolk Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	103,492	122,536	310,799	335,320	43,926	59,560
Tonopah and Goldfield Railroad	130	31	2,051	2,188	126	
Tonopah and Tidewater Railroad	135	31	600	614	147	121
Virginia and Truckee Railroad	192	42		40	40	119
The Western Pacific Railroad	11,222	11,117	26,508	31,122	9,530	8,539
Totals	276,563	347,870	498,880	600,968	178,763	188,563

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Stone, sand, etc.		Other products of mines		Total products of mines	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	1,776,161	1,678,366	2,828,513	2,906,549	13,080,519	14,676,716
Bullfrog Goldfield Railroad	765	38	164	306	12,719	7,792
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	37	25	74	164	10,615	8,849
Los Angeles and Salt Lake Railroad	644,762	459,402	86,233	270,878	2,241,864	2,419,260
Nevada-California-Oregon Railway	322	275	1,010	688	3,300	3,692
Nevada Central Railroad					1,156	9,987
Nevada Copper Belt Railroad	1,184	8,678			25,843	333,627
Nevada Northern Railway	67,864	82,002	338	16,186	4,225,949	*5,011,963
Nevada Transportation Company					10,643	11,004
Pioche Pacific Railroad					16,760	10,141
Silver Peak Railroad					18,748	10,141
Southern Pacific Company	4,208,625	3,925,377	2,438,054	2,769,532	8,510,355	8,973,253
Tonopah and Goldfield Railroad	1,373		543	133	192,690	176,843
Tonopah and Tidewater Railroad	1,076	1,197	86,234	80,624	107,655	110,024
Virginia and Truckee Railroad	287	3,471	59,281	61,941	64,934	71,332
The Western Pacific Railroad	79,384	290,694	20,277	43,008	660,002	929,960
Totals	6,681,845	6,450,068	5,064,647	6,139,108	29,036,162	32,753,624

*Includes 23,024 tons of bullion copper.

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Lumber		Other forest products		Total forest products	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	1,046,908	1,229,482	384,487	391,782	1,431,345	1,621,284
Bullfrog Goldfield Railroad	1,668	929		226	1,668	1,155
Central Pacific Railroad						
Eureka Nevada Railway	1,760	516			1,760	516
Las Vegas and Tonopah Railroad	410,198	395,363	4,708	9,231	414,901	404,654
Nevada-California-Oregon Railroad	17,730	19,442	5,402	11,109	23,132	30,551
Nevada Central Railroad					498	1,112
Nevada Copper Belt Railroad	3,893	5,616	166	266	4,054	5,882
Nevada Northern Railway	15,592	39,286	11		15,603	39,296
Nevada Transportation Company					346	210
Pioche Pacific Railroad					230	229
Silver Peak Railroad					510	8
Southern Pacific Company	3,810,396	4,438,421	550,080	706,332	4,360,466	5,143,753
Tonopah and Goldfield Railroad	22,892	17,760	1,599	1,168	24,491	18,928
Tonopah and Tidewater Railroad	776	510	1,855	1,683	2,641	2,193
Virginia and Truckee Railroad	4,090	4,874	6,042	5,805	10,132	10,679
The Western Pacific Railroad	113,139	128,027	12,479	20,692	125,618	148,719
Totals	5,449,022	6,280,226	966,789	1,147,324	6,417,396	7,429,109

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Petroleum and other oils		Sugar		Naval stores	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	1,153,476	1,643,520	284,256	372,195		
Bullfrog Goldfield Railroad	5,566	6,468	97	201		
Central Pacific Railroad						
Eureka Nevada Railway						
Las Vegas and Tonopah Railroad	3,049	1,798	77	201		
Los Angeles and Salt Lake Railroad	62,748	43,730	50,169	52,346	55	215
Nevada-California-Oregon Railway	1,559	1,821	196	199		
Nevada Central Railroad						
Nevada Copper Belt Railroad	1,294	1,109				
Nevada Northern Railway	64,155	93,091	322	431		
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	646,777	841,971	458,587	528,931	882	21,459
Tonopah and Goldfield Railroad	13,364	16,468	200	242		
Tonopah and Tidewater Railroad	1,406	627	21			
Virginia and Truckee Railroad	5,814	7,045		18		
The Western Pacific Railroad	116,970	135,318	58,208	87,965	302	575
Totals	2,076,078	2,792,966	877,128	1,042,699	1,239	22,249

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Iron—Pig and bloom		Iron and steel rails		Other castings and machinery	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railroad	89,680	124,089	42,649	69,299	575,016	817,976
Burlingame Railroad	51		6,912	314	722	1,567
Central Pacific Railroad						
Eureka Nevada Railway			115	353	389	472
Las Vegas and Tonopah Railroad	25	23,185	11,560	9,962	48,075	61,154
Los Angeles and Salt Lake Railroad	21,310			561	130	289
Nevada-California-Oregon Railroad						
Nevada Central Railroad			289	121	433	637
Nevada Copper Belt Railroad	603	1,210	460	609	2,372	6,154
Nevada Northern Railway						
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	176,372	82,654	89,186	46,788	371,335	445,762
Tonopah and Goldfield Railroad	141	195	190	205	1,006	1,862
Tonopah and Tidewater Railroad			131	106	821	700
Virginia and Truckee Railway					456	621
The Western Pacific Railroad	7,339	19,186	13,533	11,834	63,241	53,888
Totals	294,631	250,472	115,014	140,145	1,063,625	1,391,022

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Bar and sheet metal		Cement, brick, and lime		Agricultural implements	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	186,143	297,575	1,479,047	1,363,338	72,091	78,024
Bullfrog Goldfield Railroad	136	315	5,415	5,952		
Central Pacific Railroad						
Eureka Nevada Railroad						
Las Vegas and Tonopah Railroad	97	131	5,404	5,651		
Los Angeles and Salt Lake Railroad	32,729	57,385	122,342	156,247	2,415	2,808
Nevada-California-Oregon Railroad		30	470	676	278	198
Nevada Central Railroad						
Nevada Copper Belt Railroad			573	905	14	33
Nevada Northern Railway	1,724	1,789	4,049	7,917	25	164
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	329,437	466,178	1,249,905	1,325,652	30,155	47,168
Tonopah and Goldfield Railroad	288	1,923	1,923	2,117		
Tonopah and Tidewater Railroad	60	196	192	511		19
Virginia and Truckee Railroad	141	3,081	3,081	3,520	92	65
The Western Pacific Railroad	47,964	118,371	23,650	31,941	3,449	5,764
Totals	586,708	941,970	2,901,004	2,904,126	108,519	134,303

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Wagons, carriages, tools, etc.		Wines, liquors, and beers		Household goods and furniture	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	145,656	196,652	139,145	157,464	106,634	113,691
Bullfrog Goldfield Railroad	29	29	1,220	962		16
Central Pacific Railroad						
Eureka Nevada Railroad						
Las Vegas and Tonopah Railroad	8	12	617	401		
Los Angeles and Salt Lake Railroad	15,636	18,182	16,049	17,770	13,346	6,647
Nevada-California-Oregon Railroad	92	172	59	24		
Nevada Central Railroad						
Nevada Copper Belt Railroad		26	262	436		
Nevada Northern Railroad	44	207	2,570	4,653	44	
Nevada Transportation Company						
Pioche Pacific Railroad						
Silver Peak Railroad						
Southern Pacific Company	103,496	122,536	310,769	335,330	48,996	59,560
Tonopah and Goldfield Railroad	135	31	2,061	2,138	26	
Tonopah and Tidewater Railroad	120	62	600	609	147	121
Virginia and Truckee Railroad	125	44		14	40	119
The Western Pacific Railroad	11,222	11,117	25,508	31,122	9,630	8,539
Totals	276,563	347,870	498,880	600,968	176,763	186,593

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Other manufactures		Total manufactures		Less than carload goods	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	928,887	1,131,460	5,202,640	6,864,188	1,470,347	1,648,446
Bullfrog Goldfield Railroad	1,960	2,140	22,068	17,864	2,798	2,542
Central Pacific Railroad						
Eureka Nevada Railway	1,118	727	10,909	9,676	2,203	1,723
Las Vegas and Tonopah Railroad	67,373	78,168	468,807	527,812	126,880	118,063
Los Angeles and Salt Lake Railroad	680	351	3,414	4,300	9,841	8,881
Nevada-California-Oregon Railway			808	797		1,257
Nevada Central Railroad		843	2,845	4,160	4,207	6,694
Nevada Copper Belt Railroad	2,807	6,476	79,076	122,708	9,660	12,609
Nevada Northern Railway			2,424	3,506		804
Nevada Transportation Company			4,928	3,866		376
Pioche Pacific Railroad			170	922		29
Southern Pacific Company	924,476	1,177,958	4,689,402	5,551,647	1,538,798	1,629,476
Tonopah and Goldfield Railroad	2,940	3,068	22,196	26,892	6,911	10,766
Tonopah and Tidewater Railroad	1,365	2,265	4,683	5,268	3,160	2,686
Virginia and Truckee Railway	1,844	1,157	10,243	12,608	9,513	3,230
The Western Pacific Railroad	189,660	151,832	600,561	667,272	91,361	68,916
Totals	2,121,720	2,556,440	11,119,598	13,319,204	3,274,564	3,432,436

TONNAGE STATISTICS
TOTAL TONNAGE OF VARIOUS COMMODITIES CARRIED DURING YEAR

Company	Miscellaneous		Total tonnage—Entire line	
	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway.....	97,235	137,435	25,694,999	31,310,927
Bullfrog Goldfield Railroad.....	1,941	2,101	44,060	34,139
Central Pacific Railroad.....				
Eureka Nevada Railway.....	1,431	2,081	29,673	25,047
Las Vegas and Tonopah Railroad.....	67,861	62,917	3,731,202	3,964,823
Los Angeles and Salt Lake Railroad.....	1,352	2,164	70,457	88,388
Nevada-California-Oregon Railway.....	999	144	6,678	16,108
Nevada Central Railroad.....	696	846	46,661	361,906
Nevada Copper Belt Railroad.....	11,486	19,123	4,363,669	5,216,082
Nevada Northern Railway.....	2,702	697	18,124	14,908
Nevada Transportation Company.....	901		22,819	14,102
Pioche Pacific Railroad.....	72	552	1,661	1,688
Silver Peak Railroad.....				
Southern Pacific Company.....	514,428	836,136	26,904,486	28,674,928
Tonopah and Goldfield Railroad.....	3,691	4,346	257,769	243,378
Tonopah and Tidewater Railroad.....	844	809	119,667	121,632
Virginia and Truckee Railway.....	1,216	10,079	116,866	126,190
The Western Pacific Railroad.....	38,727	63,967	1,777,662	2,529,118
Totals.....	745,360	1,182,261	66,198,643	72,466,214

TOTAL TAXES PAID IN VARIOUS STATES

Company	Nevada		California		Utah	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	\$1,448.49	\$1,196.26	\$1,059,730.27	\$1,142,621.88		\$6.02
Bullfrog Goldfield Railroad	9,497.82	7,964.82	2.32	200.00		
Central Pacific Railway ^a						
Eureka Nevada Railway ^b	430.83	912.29				
Las Vegas and Tonopah Railroad	13,246.79	11,626.81	388.42	350.00	\$225.00	225.00
Los Angeles and Salt Lake Railroad	168,486.82	186,049.69	199,602.06	224,992.62	197,260.74	240,197.24
Nevada-California-Oregon Railway	4,128.75	5,534.95	17,400.21	17,163.96		
Nevada Central Railroad ^b	1,611.49	2,069.01				
Nevada Copper Belt Railroad ^b	4,386.44	4,680.50				
Nevada Northern Railway	57,070.37	75,349.20				
Nevada Transportation Company	1,647.21	2,898.37				
Pioche Pacific Railroad	761.50	839.08				
Silver Peak Railroad ^b	553,910.35	682,800.86	3,321,681.55	3,346,556.21	156,349.43	185,162.73
Southern Pacific Company	42,174.27	41,351.53	1.13	1.17		
Tonopah and Goldfield Railroad	2,767.53	2,980.24	17,689.56	21,806.17		
Tonopah and Tidewater Railroad	21,886.82	21,296.86				
Virginia and Truckee Railroad	149,181.95	186,352.01	180,969.55	210,642.30	46,194.89	61,411.55
The Western Pacific Railroad						
Totals	\$1,047,518.56	\$1,245,807.48	\$4,782,513.33	\$4,983,896.28	\$400,080.06	\$487,002.54

^aTaxes paid by the Southern Pacific Company.^bNo segregation shown of taxes paid. Entire road in Nevada and total taxes paid carried under Nevada account.

TAXES PAID IN VARIOUS STATES

Company	Oregon		Various			Total taxes accrued	
	1916	1917	1916	1917		1916	1917
Atchison, Topeka and Santa Fe Railway		\$6.67	\$4,814,561.98	\$9,441,326.30		\$6,875,740.65	\$10,585,159.13
Bullfrog Goldfield Railroad			128.69	27.57		9,623.83	8,212.39
Central Pacific Railway ^a							
Eureka Nevada Railway						430.83	912.23
Las Vegas and Tonopah Railroad						13,859.21	12,201.81
Los Angeles and Salt Lake Railroad			19,870.47	122,204.66		695,220.06	783,444.21
Nevada-California-Oregon Railway		919.18	11.67	1,022.06		23,373.24	24,540.11
Nevada-Central Railroad	\$1,882.61					1,611.49	2,089.01
Nevada Copper Belt Railroad				1,476.40		4,484.14	6,066.90
Nevada Northern Railway			87.70	848,325.15		72,063.62	423,674.36
Nevada Transportation Company			14,998.25			1,547.21	2,896.37
Pioche Pacific Railroad							
Silver Peak Railroad						781.50	839.08
Southern Pacific Company	608,388.96	696,922.87	1,650,151.84	4,640,709.07		6,290,457.43	9,554,151.74
Tonopah and Goldfield Railroad			2,596.81	21,424.93		44,770.71	62,777.63
Tonopah and Tidewater Railroad			1,000.00	1,993.68		21,357.09	26,232.10
Virginia and Truckee Railway			305.77	561.65		22,202.69	21,961.51
The Western Pacific Railroad			122.76	31,891.21		376,459.17	492,297.07
Totals	\$610,226.57	\$699,846.72	\$6,503,829.27	\$14,610,962.67		\$13,344,117.79	\$22,007,457.70

^aTaxes paid by the Southern Pacific Company.

TOTAL TAXES PAID IN VARIOUS STATES

Railroad and State	1916	1917	Railroad and State	1916	1917
ATCHISON, TOPEKA AND SANTA FE RAILWAY—			NEVADA NORTHERN RAILWAY—		
Illinois.....	\$266,797.75	\$380,205.67	Maine.....	\$125.00	\$125.00
Iowa.....	83,101.17	26,816.27	United States Government.....	14,868.25	348,200.15
Missouri.....	131,496.13	132,718.56			
Kansas.....	1,461,490.67	1,807,205.57	SOUTHERN PACIFIC COMPANY—		
Oklahoma.....	637,600.76	800,556.54	Arizona.....	437,650.60	400,094.61
Colorado.....	250,639.28	286,941.47	New Mexico.....	89,816.98	144,975.95
New Mexico.....	674,731.73	977,073.80	Mexico.....	1,378.25	1,392.14
Arizona.....	538,888.10	525,586.91	Kentucky.....	197,493.90	145,248.74
Nebraska.....	149.22	588.44	Cuba.....	468.75	
Other States.....	1.32	173.96	United States Government.....	923,243.26	3,946,381.68
Canada.....	25.25	195.21	Other States.....		2,227.11
United States Government.....	820,170.76	4,492,364.00			
BULLFROG GOLDFIELD RAILROAD—			TONOPAH AND GOLDFIELD RAILROAD—		
United States Government.....	128.59	27.57	Pennsylvania.....	5.83	
			United States Government.....	2,589.43	21,424.33
LOS ANGELES AND SALT LAKE RAILROAD—					
Illinois.....	11.22	6.10	TONOPAH AND TIDEWATER RAILROAD—		
Colorado.....	4.92	*1.93	New Jersey.....	1,000.00	1,500.00
United States Government.....	19,854.33	122,196.63	United States Government.....		493.68
NEVADA-CALIFORNIA-OREGON RAILWAY—					
United States Government.....	11.67	1,022.06	VIRGINIA AND TRUCKEE RAILWAY—		
			United States Government.....	305.77	561.65
NEVADA COPPER BELT RAILROAD—					
Maine.....	75.00	75.00	THE WESTERN PACIFIC RAILROAD—		
United States Government.....	12.70	1,401.40	United States Government.....	122.78	31,391.21
			Totals.....	\$6,508,829.17	\$14,911,073.83

*Tax paid in Missouri.

CONSUMPTION OF FUEL BY LOCOMOTIVES

Company	Coal—Tons		Fuel oil—Gallons		Total fuel consumed—Tons	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	2,407,629	2,680,665	273,366,810	321,224,766	4,150,063	4,724,861
Bullfrog Goldfield Railway			448,737	314,638	2,671	1,873
Central Pacific Railway						
Eureka Nevada Railway			604,759	324,139	3,600	1,929
Las Vegas and Tonopah Railroad			45,208,828	40,497,576	359,220	361,927
Los Angeles and Salt Lake Railroad	90,183	120,870	1,986,019	2,306,887	11,893	13,726
Nevada-California-Oregon Railway						
Nevada Central Railroad ^a						
Nevada Copper Belt Railway						
Nevada Northern Railway						
Nevada Transportation Company ^a	36,029	40,170	6106,589	c421,653	409	1,757
Pioche Pacific Railroad ^a					36,029	40,170
Silver Peak Railroad ^a						
Southern Pacific Company ^d	4,478	1,270	523,791,842	604,989,884	8,122,300	3,602,109
Tonopah and Goldfield Railroad			1,561,822	1,372,547	10,625	9,337
Tonopah and Tidewater Railroad			1,170,703	997,727	9,366	7,981
Virginia and Truckee Railroad			750,539	766,524	5,361	5,404
The Western Pacific Railroad	40,154	50,498	40,353,262	42,614,962	290,352	304,159
Totals	2,578,443	2,898,463	889,355,410	1,016,767,183	7,991,879	9,076,233

^aFigures not shown. ^bIncludes 14,812 gallons of gasoline. ^cBased on 7½ pounds to the gallon. ^dFuel wood cords: 1916, 82.1; 1917, 15.

OFFICERS OF RAILROAD COMPANIES OPERATING IN NEV.

Atchison, Topeka and Santa Fe Railway Company

Directors—Edward J. Berwind, Augustus D. Julliard, Henry S. P. Charles Steele, H. Rieman Duval, Ogden L. Mills, and Walker D. Hines; New York; Henry C. Frick, Pittsburgh; Andrew C. Jobs, Merriam, Boston; Homer A. Stillwell and Edward P. Ripley, of Chicago; Benjamin P. DeWitt Cuyler, Philadelphia; Howel Jones and Charles S. Topeka, Kans.

Officers—President, E. P. Ripley, Chicago, Ill.; Vice-President, W. B. Chicago, Ill.; Vice-President, Edward Chambers, Chicago, Ill.; Vice-P. W. E. Hodges, Chicago, Ill.; Secretary and Treasurer, E. L. Copeland, Kans.; General Counsel, Walker D. Hines, New York; General Solicitor Lathrop, Chicago, Ill.; Comptroller, D. L. Gallup, New York; Auditor, W. E. Bailey, Chicago, Ill.; General Manager Eastern Line Fox, Topeka, Kans.; General Manager Western Lines, R. J. Parker, A. Tex.; General Manager Coast Lines, A. G. Wells, Los Angeles, Cal.; Manager S. F. P. and P. Lines, W. A. Drake, Prescott, Ariz.; Chief E. C. F. W. Felt, Chicago, Ill.; Mechanical Superintendent, John Purcell, Ill.; General Superintendent, W. K. Etter, Newton, Kans.; General tendent, E. Raymond, Topeka, Kans.; General Superintendent, C. H. Br Junta, Colo.; General Superintendent, T. H. Sears, Amarillo, Tex.; Comm of Taxes, G. G. Tunnell, Chicago, Ill.

Bullfrog Goldfield Railroad Company

Directors—J. Ross Clark, C. O. Whittemore, H. C. Lee, W. A. Clark, H. Comstock, and F. M. Jenifer, all of Los Angeles, Cal.; Hugh H. Brow pah, Nevada.

Officers—President, J. Ross Clark; Vice-President, C. O. Whittemore; retary, W. H. Comstock; Treasurer, W. H. Comstock; Counsel, C. O. more; Auditor, J. M. Evans; Chief Engineer, Arthur Maguire, all Angeles, Cal.; Mechanical Superintendent, G. E. Lane, Jr., Las Vegas, Superintendent, C. E. M. Beall, Las Vegas, Nevada; Traffic Manager, S. man, Goldfield, Nevada; Roadmaster, J. C. McMahon, Las Vegas.

Central Pacific Railway Company

Directors—T. O. Edwards, Wm. F. Herrin, Wm. Hood, G. L. King, McCormick, C. H. Redington, W. R. Scott, Wm. Sproule, all of San Francisco and T. F. Rowlands, Ogden, Utah.

Officers—President, Wm. F. Herrin, San Francisco, Cal.; Vice-P. W. R. Scott, San Francisco, Cal.; Second Vice-President, A. D. McDonald, New York; Third Vice-President, C. H. Redington, San Francisco, Cal. President, E. O. McCormick, San Francisco, Cal.; Secretary, G. L. King, San Francisco, Cal.; Treasurer, A. K. Van Deventer, New York; Comptroller McDonald, New York; Auditor, T. O. Edwards, San Francisco, Cal. Engineer, William Hood, San Francisco, Cal.; Land Commissioner, McAllaster, San Francisco, Cal.

Eureka Nevada Railway Company

Directors—George Whittell, John F. Cannon, L. H. Clar, George Whittell, Jr., of San Francisco, Cal.; and Charles L. Rood, Salt Lake City, Utah.

Officers—President, George Whittell; Vice-President, George Whittell, Jr.; Secretary and Treasurer, L. H. Clar, all of 166 Geary Street, San Francisco, Cal.

Las Vegas and Tonopah Railroad Company

Directors—W. A. Clark, New York; W. A. Clark, Jr., J. Ross Clark, H. C. Lee, C. O. Whittemore, W. H. Comstock, all of Los Angeles, Cal.; David Keith, Salt Lake City, Utah.

Officers—President, J. Ross Clark; Vice-President, C. O. Whittemore; Secretary and Treasurer, W. H. Comstock; Counsel, C. O. Whittemore; Auditor, J. M. Evans; Chief Engineer, Arthur Maguire, all of Los Angeles, Cal.; Mechanical Superintendent, G. E. Lane, Jr., Las Vegas, Nevada; Superintendent, C. E. M. Beall, Las Vegas, Nevada; Traffic Manager, C. E. Redman, Goldfield, Nevada; Roadmaster, J. C. McMahon, Las Vegas.

Los Angeles and Salt Lake Railroad Company

Directors—W. A. Clark, New York; B. S. Lovett, E. D. Kenna, New York; Thomas Kearns, H. V. Platt, Salt Lake City, Utah; J. Ross Clark, C. C. Barry, F. F. Miller, J. F. Sartori, W. G. Kerckhoff, Oscar Lawler, W. H. Comstock, of Los Angeles, Cal.

Officers—President, W. A. Clark, New York; First Vice-President, H. V. Platt, Salt Lake City, Utah; Second Vice President, J. Ross Clark; General Traffic Manager, F. A. Wann; Secretary, W. H. Comstock; Treasurer, W. H. Leete; General Counsel, A. S. Halstead; Auditor, C. C. Barry; General Manager, H. C. Nutt; Chief Engineer, Arthur Maguire; Mechanical Superintendent, D. P. Kellogg; General Land and Tax Agent, F. A. Waters, all of Los Angeles, Cal.

Nevada-California-Oregon Railway

Directors—Charles Moran, D. E. Moran, both of 68 William Street, New York; C. Hamilton, Waco, Tex.; R. M. Cox, J. W. Ward, George Wingfield, James Glynn, of Reno, Nevada; S. H. McCartney, E. F. Smith, O. R. Belcher, of Alturas, Cal.; Malcolm McConihe, Washington D. C.; Geo. Buckingham, Fairport, Cal.

Officers—President, Charles Moran, New York; Vice-President, C. Hamilton, Waco, Tex.; Secretary and General Auditor, S. H. McCartney, Reno, Nevada; Treasurer and General Manager, R. M. Cox, Reno, Nevada; General Attorney, James Glynn, Reno, Nevada; General Superintendent, O. R. Belcher, Alturas, Cal.; General Counsel, Sanborn & Roehl, San Francisco, Cal.; Comptroller, T. T. Wells, New York.

Nevada Central Railroad Company

Directors—J. G. Phelps Stokes, Timothy Davenport, I. N. Phelps Stokes, Harold Phelps Stokes, Jas. W. McCulloch, all of New York; Daniel J. Shea, John M. Hiskey, of Austin, Nevada.

Officers—President, J. G. Phelps Stokes; Vice-President, Timothy Davenport, New York; Secretary, Treasurer, Auditor and General Superintendent, John M. Hiskey, Austin, Nevada; General Manager, Jas. W. McCulloch, New York.

Nevada Copper Belt Railroad Company

Directors—W. C. Orem, T. W. Boyer, J. J. Corum, F. M. Orem, Henry I. Moore, all of Salt Lake City, Utah; James G. Berryhill, San Francisco, Cal.; A. J. Orem, Boston, Mass.; W. H. Wattis, Ogden, Utah, and James G. Berryhill, Jr., San Francisco, Cal.

Officers—President, W. C. Orem, Salt Lake City, Utah; First Vice-President, A. J. Orem, Boston, Mass.; Second Vice-President, James G. Berryhill, San Francisco, Cal.; Secretary and Treasurer, F. M. Orem, Salt Lake City, Utah; Auditor, C. A. Chapman, Ludwig, Nevada; General Counsel, Henry I. Salt Lake City, Utah; General Manager, W. C. Orem, Salt Lake City, Utah; General Superintendent, Archie J. Orem, Ludwig, Nevada; General Freight Passenger Agent, P. H. Cook, Mason, Nevada.

Nevada Northern Railway Company

Directors—S. W. Eccles, Murray Guggenheim, W. E. Bennett, E. G. Nelson, Simon Guggenheim, of 120 Broadway, New York; W. H. Smith, Philadelphia, Pa.; Chas. Hayden, Boston; D. C. Jackling, San Francisco, Cal.; C. M. Mendenhall, Colorado Springs, Colo.

Officers—President, S. W. Eccles, New York; First Vice-President, D. C. Jackling, San Francisco, Cal.; Second Vice-President and Secretary, W. E. Bennett, New York; Treasurer, C. K. Lipman, New York; General Solicitor, Lindley, San Francisco, Cal.; Comptroller, F. W. Hills, New York; Auditor, Frank Roper, East Ely, Nevada; General Manager, L. G. Cannon, East Ely, Nevada; Chief Engineer, C. W. Backe, East Ely, Nevada.

Nevada Transportation Company

(Operating Eureka Nevada Railway)

Directors—F. C. Sykes, S. C. Chadwick, J. A. Donahue, J. P. Langhorne, 418 Crocker Building, San Francisco, Cal.; L. H. Clar, 166 Geary Street, San Francisco, Cal.

Officers—President, F. C. Sykes; Vice-President, G. C. Chadwick; Secretary, L. H. Clar; Treasurer, George Whittell; Attorneys, G. E. Stoker and McNair, all of San Francisco, Cal.; Auditor, J. B. Rice, Palisade, Nevada; General Manager, J. E. Sexton, Palisade, Nevada.

Pioche Pacific Railroad Company

Directors—E. B. Critchlow, G. A. Marr, G. A. Critchlow, McCormick Bank, Salt Lake City, Utah; W. W. Armstrong, National Copper Bank, Salt Lake City, Utah; W. J. Barrette, McCormick Building, Salt Lake City, Utah.

Officers—President, G. A. Marr; Vice-President and Secretary, E. B. Critchlow, Salt Lake City, Utah; Treasurer, W. W. Armstrong, Salt Lake City, Utah; General Manager and General Superintendent, H. R. Van Wagenen, Nevada.

Silver Peak Railroad Company

Directors—George T. Oliver, William Flinn, Pittsburg, Pa.; William A. Bradley, B. A. Rives, S. H. Fine, Blair, Nevada.

Officers—President, George T. Oliver, Pittsburg, Pa.; Vice-President, William A. Bradley; General Manager, William A. Bradley; Secretary, Treasurer, General Passenger Agent, and General Freight Passenger Agent, B. A. Rives, Blair, Nevada.

Southern Pacific Company

Directors—W. P. Bliss, Bernardsville, N. J.; Henry W. De Forrest, J. Harding, Edward S. Harkness, H. E. Huntington, L. F. Loree, Lewis J. E. P. Swenson, F. D. Underwood, Robert Goelet, J. Kruttschnitt, Ogden, Utah; of 165 Broadway, New York; W. B. Scott, Houston, Tex.; William Sprague, San Francisco, Cal.; J. N. Jarvie, New York.

Officers—Chairman of the Executive Committee, J. Kruttschnitt; Director,

Traffic, Lewis J. Spence; General Counsel, J. P. Blair; Vice-President and Controller, A. D. McDonald; Vice-President and Assistant to the Chairman, W. A. Worthington; Assistant Director of Traffic, F. H. Plaisted; Assistant General Counsel, Gordon M. Buck; General Attorney and Commerce Counsel, F. H. Wood; Director of Purchases, F. W. Mahl; Consulting Engineer, J. D. Isaacs; Treasurer, A. K. Van Deventer; Clerk and Secretary, Hugh Neill; Assistant Controller, H. B. Johnson; Assistant Controller, G. W. Mulks; Assistant Clerk and Assistant Secretary, W. F. Bull; Assistant Treasurer, George M. Thornton; Transfer Agent, J. A. Simpson; Registrar of Transfers, Union Trust Company, all of New York; Assistant Clerk, John B. Weaver, Anchorage, Ky.; General Agent, St. D. J. De Blanc, New Orleans, La.; President, William Sproule; Assistant to President, C. J. Millis; Vice-Presidents, William F. Herrin, W. R. Scott, E. O. McCormick; General Manager, W. R. Scott; Auditor, T. O. Edwards; Assistant Secretary, G. L. King; Assistant Treasurer, W. F. Ingram; Superintendent of Transportation, G. F. Richardson; General Superintendent Motive Power, Geo. McCormick; Chief Engineer, William Hood; Assistant Chief Engineer, J. Q. Barlow; Chief Surgeon and Manager Hospital Department, F. K. Ainsworth; General Purchasing Agent, F. W. Taylor; Freight Traffic Manager, G. W. Luce; Assistant Freight Traffic Manager, T. A. Graham; General Freight Agent, J. G. Stubbs; Passenger Traffic Manager, C. S. Fee; General Passenger Agent, F. E. Batturs; Vice-President and Chief Counsel, William F. Herrin; Claims Attorney, D. R. Sessions; Tax Attorney, D. V. Cowden; Mail Traffic Manager and Inspector of Transportation Service, H. P. Thrall; Land Commissioner, B. A. McAllaster; Secretary Leased Lines, G. L. King; Industrial Agent, E. B. Leavitt, all of San Francisco, Cal.; Assistant General Manager, D. W. Campbell, Los Angeles, Cal.; Assistant General Manager, J. H. Dyer, Portland, Oreg.; General Freight Agent, E. W. Clapp, Los Angeles, Cal.; General Passenger Agent, F. S. McGinnis, Los Angeles, Cal.; General Passenger Agent, J. M. Scott, Portland, Oreg.; General Freight Agent, H. A. Hinshaw, Portland, Oreg.

Tonopah and Goldfield Railroad Company

Directors—Jas. S. Austin, Samuel Bell, Jr., M. B. Cutter, Clyde A. Heller, C. A. Higbee, Henry D. Moore, William M. Potts, J. Harvey Whiteman, of Philadelphia, Pa.; Charles E. Knox, Berkeley, Cal.; Charles R. Miller, Wilmington, Del.; George Wingfield, F. M. Manson, Reno, Nevada; Barton Hoopes, Philadelphia, Pa.

Officers—President, M. B. Cutter; First Vice-President, James S. Austin; Second Vice-President, C. A. Higbee, all of Philadelphia, Pa.; Secretary, William F. Henshaw; Treasurer, C. A. Higbee, Philadelphia, Pa.; Assistant Treasurer, T. A. Frazier, Tonopah, Nevada; General Counsel, Hugh H. Brown, Tonopah, Nevada; General Solicitor, J. Harvey Whiteman, Philadelphia, Pa.; Auditor, R. S. Titlow, Goldfield, Nevada; Chief Engineer, R. W. Cattermole, Goldfield, Nevada; Traffic Manager and Superintendent, W. D. Forster, Goldfield, Nevada.

Tonopah and Tidewater Railroad Company

Directors—R. C. Baker, London, Eng.; C. B. Zabriskie, J. A. Middleton, New York; F. M. Smith, Oakland, Cal.; De Witt Van Buskirk, Bayonne, N. J.; J. W. Hardenbergh, Jersey City, N. J.; John Ryan, Oakland, Cal.

Officers—President, John Ryan, Oakland, Cal.; Vice-President and General Counsel, De Witt Van Buskirk, Bayonne, N. J.; Secretary and Treasurer, C. B. Zabriskie, New York; Auditor, H. Escherich, Los Angeles, Cal.; General Manager, John Ryan, Oakland, Cal.; Superintendent, W. W. Cahill, Stagg, Cal.

Virginia and Truckee Railway

Directors—A. M. Ardery, H. L. Griffiths, George T. Mills, F. E. M. Carson City, Nevada; J. W. Eckley, W. E. Sharon, Virginia City, N. Jno. F. Cannon, Jas. Newlands, Jr., San Francisco, Cal.; Ogden Mills, New

Officers—President, Ogden Mills, New York; Vice-President and General Manager, A. M. Ardery, Carson City, Nevada; Secretary, F. E. Murphy, Carson City, Nevada; Treasurer, Carson Valley Bank, Carson City, Nevada; Chief Engineer, W. H. Kirk, Carson City, Nevada; Mechanical Superintendent, C. J. R. Carson City, Nevada; Auditor, O. W. Tennant, Carson City, Nevada.

The Western Pacific Railroad Company

Directors—A. W. Krech, J. B. Dennis, A. M. Hunt, Wm. Salomon, all of New York; C. M. Levey, A. R. Baldwin, Warren Olney, Jr., J. G. Hooper, Wm. W. T. Smith, Harris Weinstock, C. W. Nibley, all of San Francisco, Cal.; T. S. Montgomery, San Jose, Cal.; E. E. Paxton, San Francisco, Cal.; Richard Young, New York.

Officers—President, C. M. Levey; Vice-President and General Attorney, A. R. Baldwin, San Francisco, Cal.; Counsel to the Board, F. W. McCutcheon, New York City; Secretary, C. F. Craig; Treasurer, Charles Elsey; General Manager, Warren Olney, Jr.; General Auditor, J. F. Evans; Chief Engineer, T. J. V. San Francisco, Cal.; General Master Mechanic, A. H. Powell, Sacramento, Cal.; General Superintendent, E. W. Mason; Tax Agent, J. L. Smith, San Francisco, Cal.

**TABULATED FIGURES DRAWN FROM MONTHLY REPORTS OF
RAILROADS OPERATING IN NEVADA FOR THE YEARS
ENDING DECEMBER 31, 1916 AND 1917.**



NEVADA STATISTICS
NUMBER OF REVENUE PASSENGERS CARRIED INTRASTATE IN NEVADA

Company	January, February, March		April, May, June		July, August, September		October, November, December	
	1916	1917	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	964	569	973	489	748	556	698	506
Bullfrog Goldfield Railroad								
Central Pacific Railroad	796	586	743	548	627	446	644	581
Las Vegas and Tonopah Railroad	4,964	4,825	4,692	4,827	5,327	4,654	5,435	4,349
Los Angeles and Salt Lake Railroad	156	2,541	61	2,935	82	56	61	82
Nevada-California-Oregon Railroad	645	460	468	483	422	416	464	468
Nevada Central Railroad	2,250	3,511	1,458	2,888	1,427	2,873	2,126	2,241
Nevada Copper Belt Railroad	92,147	75,069	76,129	106,235	86,427	122,307	102,960	121,561
Nevada Northern Railway	510	334	527	446	392	344	323	367
Nevada Transportation Company								
Pioche Pacific Railroad								
Silver Peak Railroad	128	82	91	15	38	30	27	33
Southern Pacific Company	36,064	40,030	44,028	44,832	46,466	48,480	39,867	37,969
Tonopah and Goldfield Railroad	4,423	3,670	5,270	4,067	4,932	3,777	3,896	3,278
Tonopah and Tidewater Railroad			10	2	10	2		8
Virginia and Truckee Railway	14,882	21,486	18,236	19,351	19,180	22,724	17,702	19,483
The Western Pacific Railroad	2,847	3,386	4,257	4,320	4,439	4,908	4,085	4,360
Totals	180,458	156,441	157,002	190,428	169,187	211,083	178,162	195,216

NEVADA STATISTICS
NUMBER OF REVENUE PASSENGERS CARRIED ONE MILE INTRASTATE IN NEVADA

Company	January, February, March		April, May, June		July, August, September		October, November, December	
	1916	1917	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	57,108	39,475	63,707	35,888	48,990	32,338	47,628	35,742
Bullfrog Goldfield Railroad								
Central Pacific Railroad	73,672	52,272	70,551	51,995	59,132	42,190	59,242	52,722
Las Vegas and Tonopah Railroad	146,340	160,035	146,337	163,335	171,197	158,370	180,209	162,353
Los Angeles and Salt Lake Railroad	3,508	67,873	1,219	77,771	1,078	921	1,158	1,971
Nevada-California-Oregon Railroad	37,282	38,327	36,540	40,552	35,983	35,065	36,382	37,965
Nevada Central Railroad	30,677	53,233	20,009	43,896	20,318	31,998	29,066	31,350
Nevada Copper Belt Railroad	1,264,739	1,110,328	1,102,230	1,419,424	1,247,828	1,679,722	1,449,472	1,468,019
Nevada Northern Railroad	25,546	19,650	29,033	24,565	18,228	18,689	16,310	23,081
Nevada Transportation Company								
Pioche Pacific Railroad	2,063	561	2,048	263	666	525	472	578
Silver Peak Railroad	2,121,928	2,594,475	2,868,631	3,010,332	2,787,519	3,188,090	2,600,619	2,763,962
Southern Pacific Company	225,007	222,460	232,236	253,292	238,159	237,487	231,144	201,312
Tonopah and Goldfield Railroad	270	48	208	38	160	22	136	128
Tonopah and Tidewater Railroad	364,479	571,471	457,205	501,074	469,443	562,973	460,004	513,572
Virginia and Truckee Railroad	107,197	135,731	169,784	181,267	137,906	196,531	164,188	188,059
The Western Pacific Railroad								
Totals	4,459,806	5,065,989	5,258,797	5,313,663	5,316,642	6,113,944	5,276,580	5,479,754

NEVADA STATISTICS
NUMBER OF TONS OF REVENUE FREIGHT CARRIED INTRASTATE IN NEVADA

Company	January, February, March		April, May, June		July, August, September		October, November, December	
	1916	1917	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway.....	2,232	2,109	7,209	2,662	4,068	1,768	1,833	2,688
Bullfrog Goldfield Railroad.....	1,621	2,018	1,710	1,901	1,839	1,802	1,966	1,766
Central Pacific Railroad.....	2,668	4,181	2,902	5,601	3,845	5,536	3,610	5,069
Las Vegas and Tonopah Railroad.....	20	25	25	11	7	123	28	83
Nevada-California-Oregon Railroad.....	556	241	960	245	422	11	11	45
Nevada Central Railroad.....	2,616	52,339	4,122	98,342	3,911	94,616	5,869	94,110
Nevada Copper Belt Railroad.....	955,015	1,084,266	1,213,129	1,183,577	1,146,795	1,215,851	1,100,502	1,311,394
Nevada Northern Railway.....	314	7,583	7,037	2,983	10,959	2,115	7,864	1,073
Nevada Transportation Company.....	4,320	7,880	7,037	2,983	10,959	2,115	7,864	1,073
Pioche Pacific Railroad.....	4,320	7,880	7,037	2,983	10,959	2,115	7,864	1,073
Silver Peak Railroad.....	15,415	18,980	19,834	20,301	20,823	19,372	23,714	29,737
Southern Pacific Railroad.....	38,550	39,380	40,976	34,346	41,824	40,591	41,665	45,788
Tonopah and Goldfield Railroad.....	4,002	4,073	4,474	5,324	4,734	5,792	5,603	7,987
Tonopah and Tidewater Railroad.....	691	733	1,018	1,885	1,051	5,756	1,387	1,769
Virginia and Truckee Railway.....								
The Western Pacific Railroad.....								
Totals.....	1,028,377	1,216,875	1,303,155	1,846,407	1,240,331	1,377,013	1,194,831	1,503,653

NEVADA STATISTICS
NUMBER OF TONS OF REVENUE FREIGHT CARRIED ONE MILE IN NEVADA

Company	January, February, March		April, May, June		July, August, September		October, November, December	
	1916	1917	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	136,182	138,666	379,089	164,696	227,367	134,408	129,915	183,018
Bullfrog Goldfield Railroad		223,871	189,323	230,111	204,739	208,675	180,521	196,782
Central Pacific Railroad	174,735	66,194	56,061	80,067	143,857	100,479	79,800	101,490
Las Vegas and Tonopah Railroad	71,649	350	434	241	144	1,673	194	1,265
Nevada-California-Oregon Railroad	32,378	12,309	29,862	10,634	31,101	14,924	9,582	21,211
Nevada Central Railroad	36,886	901,795	52,046	1,661,369	57,324	1,577,144	86,619	1,929,717
Nevada Copper Belt Railroad	21,592,555	24,287,446	27,666,007	26,771,463	26,081,601	27,893,524	24,894,540	29,296,346
Nevada Northern Railroad	14,622	12,639	34,482	28,332	26,101	22,383	27,121	24,629
Nevada Transportation Company	35,343	77,440	52,712	38,586	79,386	23,842	69,507	7,640
Pioche Pacific Railroad	3,686	723	1,319	562	2,035	1,977	1,108	2,140
Silver Peak Railroad	1,735,231	2,360,487	1,925,632	2,433,969	1,902,028	1,694,024	2,778,440	2,425,555
Southern Pacific Company	641,673	643,043	688,441	616,780	680,560	696,080	737,328	783,209
Tonopah and Goldfield Railroad			26		362			
Tonopah and Tidewater Railroad	137,086	138,819	144,649	174,531	162,347	185,071	185,490	185,608
Virginia and Truckee Railroad	32,209	60,577	43,182	53,296	24,634	32,144	102,367	91,071
The Western Pacific Railroad								
Totals	24,645,002	28,904,259	31,257,275	32,254,649	29,622,586	32,576,348	29,233,137	35,315,676

RECAPITULATION
NEVADA INTRASTATE STATISTICS

Company	Total number of revenue passengers carried		Total number of revenue passengers carried one mile		Total number of tons of revenue freight carried	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	3,378	2,122	217,433	143,498	15,372	9,257
Bullfrog Goldfield Railroad						
Central Pacific Railroad	2,310	2,130	232,647	199,140	6,835	7,486
Las Vegas and Tonopah Railroad	20,406	18,656	643,083	644,083	12,256	18,767
Los Angeles and Salt Lake Railroad	340	5,334	5,993	147,686	63	246
Nevada-California-Oregon Railroad	1,899	1,847	146,722	151,899	1,611	1,279
Nevada Central Railroad	7,231	11,023	100,070	160,465	16,467	317,966
Nevada Copper Belt Railroad	366,653	424,102	5,064,299	5,577,493	4,416,459	4,795,583
Nevada Northern Railway	1,752	1,491	89,117	85,935	2,410	1,665
Nevada Transportation Company					30,230	14,086
Pioche Pacific Railroad	294	110	5,239	1,927		
Silver Peak Railroad	166,395	171,341	10,378,697	11,556,859	79,791	88,709
Southern Pacific Company	18,135	14,692	1,016,605	924,541	162,555	160,416
Tonopah and Goldfield Railroad						
Tonopah and Tidewater Railroad	69,823	82,933	1,751,131	2,179,096	18,943	22,241
Virginia and Truckee Railway	15,623	17,006	629,075	700,588	4,147	5,123
The Western Pacific Railroad						
Totals	664,809	763,118	20,311,825	22,473,300	4,766,744	5,448,953

RECAPITULATION
NEVADA INTRASTATE STATISTICS

Company	Total tons of revenue freight carried one mile		Average revenue per passen- ger per mile		Average revenue per ton mile	
	1916	1917	1916	1917	1916	1917
Atchison, Topeka and Santa Fe Railway	872,563	600,788	\$0.06064	\$0.06217	\$0.02284	\$0.08747
Bullfrog Goldfield Railroad	749,318	848,439	.06180	.06311	.02555	.02431
Central Pacific Railroad	350,367	348,230	.04854	.04804	.07489	.07443
Las Vegas and Tonopah Railroad	1,150	3,629	.06191	.07715	.19429	.09408
Nevada-California-Oregon Railroad	108,323	59,128	.07684	.08433	.04532	.10677
Nevada Central Railroad	232,887	6,070,025	.09781	.08078	.10722	.02262
Nevada Copper Belt Railroad	100,234,808	108,230,779	.01544	.01535	.01115	.01132
Nevada Northern Railroad	101,328	87,883	.09741	.08545	.17866	.15491
Nevada Transportation Company	296,924	147,510			.11097	.11788
Pioche Pacific Railroad	8,068	5,402	.09003	.10852	.34912	.89964
Silver Peak Railroad	8,341,831	8,904,055	.08671	.08712	.08350	.08315
Southern Pacific Company	2,743,002	2,724,062	.06524	.06567	.08575	.05489
Tonopah and Goldfield Railroad	415		.08006	.06067		
Tonopah and Tidewater Railroad	639,562	684,024	.03415	.03315	.06799	.06799
Virginia and Truckee Railroad	202,912	237,078	.03531	.03891	.07059	.07424
The Western Pacific Railroad					.07059	
Totals	114,807,976	128,960,882	\$0.03366	\$0.03341	\$0.01536	\$0.01537

ANNUAL REPORTS
OF
Telegraph, Telephone, Express, Car Com-
panies, and Electric Railways for
Years 1916 and 1917

CAPITAL STOCK

Company	Capital stock, common, par value outstanding		Capital stock, preferred, par value outstanding		Capital stock, total par value outstanding	
	1916	1917	1916	1917	1916	1917
Adams Express Company ^a	\$12,000,000.00	\$12,000,000.00			\$12,000,000.00	\$12,000,000.00
American Express Company	18,000,000.00	18,000,000.00			18,000,000.00	18,000,000.00
Wells Fargo & Company Express	23,967,400.00	23,967,400.00			23,967,400.00	23,967,400.00
Nevada Interurban Railway Company	44,725.00	44,725.00			44,725.00	44,725.00
Reno Traction Company	1,000,000.00	1,000,000.00			1,000,000.00	1,000,000.00
The Pullman Company	120,000,000.00	120,000,000.00			120,000,000.00	120,000,000.00
Baker Realty and Mercantile Company	5,356.00	5,356.00			5,356.00	5,356.00
Bel Telephone Company of Nevada	316,300.00	316,300.00			316,300.00	316,300.00
Beowawe Mercantile Company						
Bridgport Telephone and Telegraph Company ^b						
Bullfrog District Telephone Company						
Churchill County Telephone and Telegraph System						
Clar, L. H. Telephone Line						
Consolidated Power and Telephone Company	100,000.00	100,000.00			100,000.00	100,000.00
Elko County Telephone and Telegraph Company	50,780.00	50,780.00			50,780.00	50,780.00
Golconda Telephone and Power Company	40,670.00	40,670.00			40,670.00	40,670.00
Interstate Telegraph Company	500,000.00	500,000.00			500,000.00	500,000.00
Mason Valley Telephone and Telegraph Company	38,856.00	38,856.00			38,856.00	38,856.00
Mosapa Valley Telephone Company	5,790.84	5,790.84			5,790.84	5,790.84
Nevada, California and Oregon Telephone Company	45,000.00	41,000.00	\$57,511.00	\$57,015.00	102,511.00	98,015.00
Nevada Central Railroad Company Telegraph Line	250,000.00	250,000.00			250,000.00	250,000.00
Nevada Consolidated Telephone and Telegraph Company	4,205.00	4,205.00			4,205.00	4,205.00
Nevada Interurban Telephone Company	177,166.67	177,166.67			177,166.67	177,166.67
Northern Nevada Telephone and Telegraph Company	8,400.00	8,400.00			8,400.00	8,400.00
Postal Telegraph-Cable Company	25,000.00	25,000.00			25,000.00	25,000.00
Reese River Telephone Company	600.00	600.00			600.00	600.00
Searchlight and Western Telephone System						
The United Farmers Telephone and Telegraph Company	10,000.00	10,000.00			10,000.00	10,000.00
Utah, Nevada and Idaho Telephone Company ^c	251,300.00	251,300.00			251,300.00	251,300.00
Western Union Telegraph Company	99,817,100.00	99,817,100.00			99,817,100.00	99,817,100.00
White Pine Telephone Company	5,000.00	5,000.00			5,000.00	5,000.00
Yerington Electric Company	2,565.00	2,565.00			2,565.00	2,565.00
Totals	\$294,688,214.51	\$276,410,614.51	\$106,021.00	\$104,825.00	\$294,771,235.51	\$276,514,839.51

^aNot reporting in 1916. ^bSold to The United Farmers' Telephone and Telegraph Company. ^cThe Utah, Nevada and Idaho Telephone Company filed no report in 1917.

FUNDED DEBT, AND CAPITAL STOCK

Company	Dividends declared		Debt outstanding		Interest accrued	
	1916	1917	1916	1917	1916	1917
Adams Express Company		\$550,000.00		\$39,000,000.00		\$871,987.89
American Express Company	\$1,400,870.00	1,046,190.00				
Wells Fargo & Company Express	9,427,177.33	1,438,044.00				
Nevada Interurban Railway Company						
Reno Traction Company			\$138,000.00	136,000.00	\$2,160.00	2,160.00
The Pullman Company						
Baker Realty and Mercantile Company	9,629,034.66	9,543,992.68				
Bell Telephone Company of Nevada						
Beowawe Mercantile Company			815,200.00	677,200.00	26,653.66	28,886.97
Bridgeport Telephone and Telegraph Company ^c						
Bullfrog District Telephone Company						
Churchill County Telephone and Telegraph System						
Clar, L. H. Telephone Line			5,000.00	4,500.00	300.00	270.00
Consolidated Power and Telephone Company						
Elko County Telephone and Telegraph Company	4,062.40	4,062.40				
Golconda Telephone and Power Company			19,500.00	17,500.00	1,084.90	1,478.37
Interstate Telephone Company			250,000.00	250,000.00	15,000.00	15,000.00
Mason Valley Telephone Company			56,400.00	4,500.00	280.00	120.00
Moapa Valley Telephone Company	6280.68	406.88				
Nevada, California and Oregon Telephone Company	3,450.66		47,800.00	50,300.00	2,595.60	2,989.90
Nevada Central Railroad Company Telephone Line						
Nevada Consolidated Telephone and Telegraph Company						
Nevada Interurban Telephone Company						
Nevada Telephone-Telegraph Company	22,145.63	17,761.67				
Northern Nevada Telephone and Telegraph Company	420.00	420.00				
Postal Telegraph-Cable Company						
Reese River Telephone Company						
Searchlight and Western Telephone System						
The United Farmers' Telephone and Telegraph Company	1,200.00	1,000.00				
Utah, Nevada and Idaho Telephone Company			35,000.00			
Western Union Telegraph Company	5,964,666.75	6,982,237.50	31,994,000.00	31,994,000.00	1,492,200.00	1,492,200.00
White Pine Telephone Company	3,900.80	4,800.80	5,000.00	5,000.00	400.00	400.00
Yerington Electric Company		513.00				
Totals	\$26,376,989.01	\$19,589,467.41	\$33,312,900.00	\$72,139,000.00	\$1,538,654.16	\$2,415,462.13

ASSETS, LIABILITIES AND COST OF PLANT, AND EQUIPMENT

Company	Total assets and liabilities		Cost of construction for year		Total cost of plant to date	
	1916	1917	1916	1917	1916	1917
Adams Express Company	\$53,136,453.53	\$58,741,919.37		\$184,175.51	\$15,234,110.65	\$9,423,982.57
American Express Company	59,210,683.24	59,210,683.24	\$2,238,882.95	3,448,877.58	18,882,988.23	18,882,988.23
Wells Fargo & Company Express	60,708,750.04	47,452,823.41	\$65,335.76	\$96,211.96	11,110,532.84	12,046,774.79
Nevada Interurban Railway Company	25,013.73	21,871.35			95,038.85	95,038.85
Reno Traction Company	\$1,233,243.13	1,234,031.64			\$1,227,330.73	1,227,330.73
The Pullman Company	181,320,432.67	198,708,331.23	3,697,865.59	9,614,687.55	149,446,980.11	159,061,677.66
Baker Realty and Mercantile Company	46,118.91	6,145.41		25.50	44,118.91	6,145.41
Bell Telephone Company		1,265,332.35	15,087.66	100,269.37	780,566.89	880,836.86
Beowave Mercantile Company	1,457,638.71					916.00
Bridgport Telephone and Telegraph Company ^a						
Bullfrog District Telephone Company						
Churchill County Telephone and Telegraph System						
Clar, L. H. Telephone Line	(b)	56,538.30	(b)	1,400.00	(b)	42,085.33
Consolidated Power and Telephone Company	547.54	2,500.00			500.00	500.00
Elko County Telephone and Telegraph Company	2,120.20	2,424.36			1,594.17	1,594.17
Golconda Telephone and Power Company	86,910.01	102,443.18		1,192.58	60,089.90	61,282.46
Interstate Telegraph Company	918,920.36	832,485.32	14,681.66	14,006.08	81,173.53	95,178.56
Mason Valley Telephone and Telegraph Company	465,400.00	66,173.74	3,499.32	4,689.06	781,697.49	786,386.55
Moana Valley Telephone Company	45,023.82	6,032.21		904.71	10,500.00	60,904.71
Nevada, California and Oregon Telephone Company	177,248.20	180,625.20	6,611.62	1,941.26	5,790.84	5,790.84
Nevada Central Railroad Company Telegraph Line ^c					150,082.11	151,823.37
Nevada Consolidated Telephone and Telegraph Company	253,176.32	234,427.05	741.51	1,232.08	19,400.94	20,632.87
Nevada Interurban Telephone Company	4,854.30	4,458.00			4,437.04	4,437.04
Nevada Telephone-Telegraph Company	328,591.26	340,186.78		201.06	279,946.68	280,146.74
Northern Nevada Telephone and Telegraph Company			681.15		1,908.01	1,908.01
Postal Telegraph-Cable Company					25,000.00	25,000.00
Reese River Telephone Company	31,866.46	31,866.46				
Searchlight and Western Telephone System			60.00		1,875.00	
The United Farmers' Telephone and Telegraph Company			461.85	2,817.51		
Utah, Nevada and Idaho Telephone Company	\$59,447.76		4,567.32		\$23,621.02	
Western Union Telegraph Company	190,780,373.15	204,363,657.35	2,225,962.63	2,619,650.48	143,287,704.34	145,907,354.82
White Pine Telephone Company	59,768.08	60,966.32	1,179.61	1,211.45		
Yerington Electric Company	13,849.79	12,966.74	550.73	1,160.72		88,812.27
Totals	\$480,790,792.87	\$573,166,686.27	\$9,224,298.66	\$17,134,655.98	\$322,896,009.96	\$349,108,770.84

^aFigures for year ended June 30, 1916.^bFigures not shown in report on account of no record.^cOperated for railroad use and reported by railroad company in its report.^dFigures for year ended June 30, 1917.^eSold to The United Farmers' Telephone and Telegraph Company.

INCOME ACCOUNT

Company	Gross earnings from operation		Operating expenses		Net operating income or deficit	
	1916	1917	1916	1917	1916	1917
Adams Express Company	966,646,677.04	854,380,865.39	363,763,926.53	\$57,184,060.95	\$2,882,750.51	\$2,823,195.56
Wells Fargo & Company Express	451,595,362.41	779,815,069.46	48,067,015.38	78,547,106.09	3,528,347.08	1,287,963.87
Nevada Interurban Railway Company	4,182.55	61,164,680.13	4,206.80	59,993,852.20	24.25	1,180,808.08
Reno Traction Company	31,386.30	4,216.25	128,747.89	4,164.02	12,638.41	52.23
The Pullman Company	44,202,619.83	55,443.60	80,878,524.89	51,708.52	13,824,084.94	3,740.08
Baker Realty and Mercantile Company	514.68	61,776,680.86	118.50	38,316,435.77	14.68	13,460,245.09
Bell Telephone Company of Nevada	110,819.60	149,614.42	113,833.75	140,070.48	9,014.15	56.11
Beowawe Mercantile Company		10.00		2.50		9,543.94
Bridgeport Telephone and Telegraph Company						7.50
Bullfrog District Telephone Company						
Churchill County Telephone and Telegraph System	11,732.70	244.00	13,087.21	200.00	1,324.57	44.00
Clar, L. H., Telephone Line	392.74	12,724.64	288.00	11,620.26	1,283.22	1,204.88
Consolidated Power and Telephone Company	3,508.49	1,036.66	2,282.69	778.44	1,230.80	1,007.01
Elko County Telephone and Telegraph Company	24,257.20	3,646.90	16,072.94	2,689.86	8,184.26	8,441.40
Golconda Telephone and Power Company	17,689.12	27,578.50	12,259.99	19,137.10	6,409.13	4,786.87
Interstate Telegraph Company	68,102.75	24,943.48	42,324.92	20,147.61	25,777.83	34,891.46
Mason Valley Telephone Company	61,287.22	74,942.14	153.43	40,060.68	1,133.79	462.79
Mosavi Valley Telephone Company	61,421.76	2,725.80	2,283.01	2,283.01	1,487.74	283.24
Nevada, California and Oregon Telephone Company	30,060.18	1,352.57	19,765.43	1,069.33	10,284.75	11,383.86
Nevada Central Railroad Company Telephone Company		88,711.84		22,857.96		
Nevada Consolidated Telephone and Telegraph Company	11,380.50	11,043.77	9,233.26	11,317.23	2,087.24	279.57
Nevada Interurban Telephone Company	58,676.90	566.76	288.80	232.27	8,740.84	314.48
Northern Nevada Telephone and Telegraph Company	1,553.72	59,913.42	49,986.06	53,571.46	889.35	6,841.96
Postal Telegraph-Cable Company	18,863.29	4,691.99	17,442.33	798.02	920.96	6,112.33
Reese River Telephone Company	80.00	90.00	84.55	41,782.12	4.35	4.36
Searchlight and Western Telephone Company	688.00	1,400.00	565.00	1,345.00	123.00	55.00
The United Farmers' Telephone and Telegraph Company	27,063.77	11,444.88	6,493.70	8,497.87	2,766.57	2,947.02
Utah, Nevada and Idaho Telephone Company	61,919,140.52	76,995,511.06	43,018,323.45	54,661,684.90	18,900,512.07	22,843,686.16
Western Union Telephone Company	14,445.55	9,164.90	8,283.41	9,355.97	6,162.14	6,968.97
White Pine Telephone Company					2,603.60	2,467.96
Yerington Electric Company	7,491.86	8,166.00	4,867.76	6,708.00		
Totals	\$224,817,663.55	\$324,662,456.20	\$196,103,849.80	\$289,132,198.79	\$68,713,813.76	\$35,530,262.48

INCOME ACCOUNT

Company	All other income—Net		Taxes paid		Gross corporate income	
	1916	1917	1916	1917	1916	1917
Adams Express Company		\$2,308,709.04		\$208,247.89		\$282,172.80
African Express Company		\$80,709.55		\$62,810.26		\$1,539,983.97
Wells Fargo & Company Express		1,062,829.21		511,849.01		\$1,744,245.91
Nevada Interurban Railway Company	\$760,213.65		\$550,235.58		\$3,073,989.21	
Nevada Junction Railway Company	1,346,811.41		468,582.28		44,380,405.22	
Reno Traction Company					24.85	52.23
The Pullman Company			11,493.54	3,075.81	1,144.77	664.77
Baker Realty and Mercantile Company			81,608,888.17	53,874,773.73	11,715,195.77	13,460,245.09
Bel Telephone Company of Nevada					514.68	558.11
Beoway Mercantile Company	27.83	561.59	7,613.13	10,274.35	111,373.32	11,351.07
Bridgeport Telephone and Telegraph Company ^k			4.30		4.30	7.50
Bridgeport District Telephone Company				11.53		32.47
Churchill County Telephone and Telegraph System						1,204.38
Clar. L. H. Telephone Line					1,324.51	263.22
Consolidated Power and Telephone Company					104.74	1,007.01
Elko County Telephone and Telegraph Company	720.00	472.56	1,122.05	1,224.23	1,230.80	6,744.61
Golconda Telephone and Power Company	100.00		815.71	1,008.00	7,782.21	\$3,538.43
Interstate Telegraph Company	185.43	15.63	1,815.00	2,911.40	\$23,900.47	\$31,918.43
Mason Valley Telephone and Telegraph Company				145.48	\$1,138.79	\$17.31
Moapa Valley Telephone Company			\$54.26	37.14	\$438.43	246.10
Nevada, California and Oregon Telephone Company			1,174.31	1,289.29	19,179.53	\$9,987.27
Nevada Central Railroad Company and Telegraph Line ⁿ	374.86	207.88				\$1,017.36
Nevada Consolidated Telephone and Telegraph Company			711.32	623.65	1,335.32	314.48
Nevada Interurban Telephone Company	486.45	623.50	4,390.08	3,304.40	4,531.31	\$3,465.04
Northern Nevada Telephone Company			78.58		762.77	612.33
Postal Telegraph-Cable Company			3,065.74	3,740.36	\$2,181.76	\$1,420.96
Reese River Telephone Company		24.60	26.76	31.00	31.37	2.15
Searchlight and Western Telephone System			35.00	30.00	88.00	25.00
The United Farmers' Telephone and Telegraph Company					2,440.29	2,947.02
Utah, Nevada and Idaho Telephone Company					2,765.87	
Western Union Telegraph Company	1,702,460.09	1,484,711.63	1,557,000.00	3,834,118.92	\$18,741,705.16	\$19,609,221.87
White Pine Telephone Company	480.00	480.00	864.04	890.59	5,778.10	6,678.88
Yerington Electric Company			484.25	415.56	2,119.35	2,042.87
Totals	\$3,811,848.72	\$5,748,402.97	\$4,208,417.68	\$5,280,437.87	\$37,980,908.08	\$35,596,218.77

Notes—Following amounts have been deducted from gross corporate income, account uncollectible revenues: \$20,744.89; \$13,789.39; \$26,468.69; \$16,420.94; \$17,52.32; \$673.87; \$1,162.28; \$306.82; \$315.18; \$120.27; \$437.00; \$304,567.00; \$30,286; \$314.90; \$236.12; \$227.79; \$254.44. ^aFigures taken from report for six months ended December 31, 1916. ^bTaxes already included in operating expenses not totaled in this column. ^cFigures taken from report for year ended June 30, 1916, ^k Line sold to The United Farmers' Telephone and Telegraph Company. ⁿTelegraph department data included in railroad report.

Italic figures denote deficit.

INCOME ACCOUNT

Company	Total deductions from gross corporate income		Net corporate income		Dividends paid out of income	
	1916	1917	1916	1917	1916	1917
Adams Express Company		\$1,056,083.98		\$1,884,548.78		
American Express Company		282,800.79		1,257,583.18		
Wells Fargo & Company Express	\$215,239.61		\$2,583,699.60		\$31,400,870.00	\$31,046,190.00
Nevada Interurban Railway Company	100,465.80	119,388.96	4,289,739.42	1,624,851.96	71,969,133.33	1,488,044.00
Reno Traction Company			24.25	52.23		
The Pullman Company	\$2,001.48	4,010.00	854.71	3,345.23		
Baker Realty and Mercantile Company			11,715,196.77	13,460,245.09	9,523,084.66	9,543,982.68
Bell Telephone Company of Nevada			14.83	58.11		
Beowawe Mercantile Company	30,393.19	35,385.36	41,671.51	36,716.43		
Bridgeport Telephone and Telegraph Company ^c			4.30	7.50		
Bullfrog District Telephone Company						
Churchill County Telephone and Telegraph System						
Clar, L. H., Telephone Line			1,284.51	32.47		
Consolidated Power and Telephone Company			104.74	1,204.38		
Elko County Telephone and Telegraph Company	189.55	245.06	1,081.25	283.23		
Golconda Telephone and Power Company	556.01	400.00	7,228.20	791.96		
Interstate Telegraph Company	1,625.80	3,335.37	3,167.52	6,344.61	4,082.40	4,082.40
Mason Valley Telephone and Telegraph Company	18,244.86	18,122.06	5,655.51	13,796.37		
Moapa Valley Telephone Company	1,424.28	55.00	309.49	317.31		
Moapa Valley Telephone and Telegraph Company	60.00		373.48	181.10	280.58	162.45
Nevada, California and Oregon Telephone Company	4,551.33	4,772.87	4,628.25	5,214.40		
Nevada Central Railroad Company and Telegraph Line ^d						
Nevada Consolidated Telephone and Telegraph Company		4.53	1,885.32	1,021.89	987.60	
Nevada Interurban Telephone Company	367.00	283.18	139.48	31.30		
Northern Nevada Telephone and Telegraph Company	804.00	804.00	3,727.51	2,661.94		
Postal Telegraph-Cable Company			762.77	612.33	420.00	420.00
Reese River Telephone Company			2,181.78	1,420.96		
Searchlight and Western Telephone System			31.57	2.15		
The United Farmers' Telephone and Telegraph Company			88.00	25.00	1,200.00	1,000.00
Utah, Nevada and Idaho Telephone Company			2,440.29	2,947.02		
Western Union Telephone Company			2,765.57			
White Pine Telephone Company	5,179,875.62	5,993,855.60	13,561,539.54	13,615,966.27	\$5,964,566.75	\$6,982,297.60
Yerington Electric Company	400.00	400.00	5,578.10	6,178.88	3,800.80	4,800.80
		822.35	2,119.35	1,720.02	384.75	513.00
Totals	\$5,556,108.73	\$7,519,764.10	\$32,424,789.35	\$38,076,454.67	\$24,914,670.77	\$17,583,438.83

^aFigures taken from report for six months ending December 31, 1916. ^bFigures taken from report for year ending June 30, 1916. ^cSold to The

DIRECTORS AND OFFICERS OF EXPRESS, ELECTRIC-RAILWAY, CAR, TELEPHONE AND TELEGRAPH COMPANIES**The Adams Express Company**

Directors—W. M. Barrett, C. S. Spencer, A. J. Hemphill, C. D. Norton, O. DeG. Vanderbilt, M. F. Plant, all of New York; H. E. Huff, Philadelphia, Pa., and G. D. Curtis, Chicago, Ill.

Officers—President, W. M. Barrett, New York; Vice-President, C. S. Spencer, New York; Vice-President and General Manager in charge of Eastern Department, H. E. Huff, Philadelphia, Pa; Vice-President and General Manager in charge of Western Department, G. D. Curtis, Chicago, Ill; Vice-President in charge of Traffic, E. M. Williams, New York; Secretary, H. H. Gates, New York; Treasurer, C. S. Spencer, New York; Attorneys, Guthrie, Bangs & Van Sinderen, New York; General Auditor, H. D. Freeman, New York; General Manager of New York Department, Charles Mackay, New York; General Manager of Foreign Department, J. S. Bigger, Paris, France; Traffic Manager, J. E. Cronin, New York.

American Express Company

Directors—G. C. Taylor, C. M. Pratt, J. H. Bradley, Cornelius Vanderbilt, J. H. Harding, J. G. Milburn, J. S. Alexander, F. P. Small, all of New York.

Officers—President, G. C. Taylor; First Vice-President in charge of General, F. P. Small; Vice-President in charge of Financial and Special Departments, H. K. Brooks; Vice-President in charge of Traffic, D. S. Elliott; Secretary, F. P. Small; Treasurer, J. F. Fargo; General Counsel, Carter, Ledyard & Milburn; Comptroller, Robert Mundle; Assistant Comptroller, A. B. Marshall; Vice-President and General Manager Eastern Lines, R. E. M. Cowie, all of New York; Acting General Manager Western Lines, C. D. Summy, Chicago; General Manager Foreign Department, Harry Gee, New York; Director-General Foreign Department, W. S. Dalliba, Paris;; Manager Department of Equipment and Supplies, Elisha Flagg, New York; Traffic Manager, E. E. Bush, New York.

Wells, Fargo & Co.

Directors—B. D. Caldwell, F. D. Underwood, C. A. Peabody, H. W. DeForest, R. Delafield, J. H. Schiff, W. V. S. Thorne, W. A. Harriman, L. F. Loree, H. E. Huntington, all of New York; E. A. Stedman, Chicago; A. Christeson, San Francisco; W. F. Herrin, San Francisco.

Officers—President, B. D. Caldwell, New York; Vice-Presidents, A. Christeson, San Francisco; E. A. Stedman, Chicago; Secretary, C. H. Gardiner, New York; Treasurer, B. H. River, New York; Vice-President and General Counsel, C. W. Stockton, New York; Vice-President and Comptroller, J. W. Newlean, Chicago; Assistant Comptroller, R. Burr, Chicago; General Manager, A. Christeson, San Francisco; General Manager, E. A. Stedman, Chicago; Vice-President in charge of Traffic, F. S. Holbrook, New York; Traffic Manager, G. S. Lee, New York.

Nevada Interurban Railway Company

Directors—L. W. Berrum, J. M. Short, O. J. Clifford, C. H. Duborg, S. H. Rosenthal, all of Reno, Nevada.

Officers—President, L. W. Berrum; First Vice-President, J. M. Short; Secretary and Treasurer, S. H. Rosenthal; General Manager, L. W. Berrum, all of Reno, Nevada.

Beno Traction Company

Directors—H. Fleishacker, Joseph Martin, J. A. Buck, M. Fleishacker, Matson, Wellington Gregg, Jr., all of San Francisco; Alden Anderson, mento, Cal.

Officers—President, H. Fleishacker; First Vice-President, John A. E. ond Vice-President, R. E. Wallace; Secretary, Joseph Martin; General Samuel Smith, all of San Francisco; General Superintendent, R. C. Lee Nevada.

The Pullman Company

Directors—R. T. Lincoln, Manchester, Vt.; F. W. Vanderbilt, G. F. Seward Webb, J. P. Morgan, all of New York; J. J. Mitchell, Chauncey J. S. Runnells, J. A. Spoor, all of Chicago.

Officers—Chairman of the Board, R. T. Lincoln, Manchester, Vt.; J. S. Runnells; Vice-Presidents, Richmond Dean, LeRoy Cramer, Clive Comptroller, L. S. Taylor; Secretary, A. S. Weinsheimer; Treasurer, A. mins, all of Chicago.

Baker Realty and Mercantile Company

Directors—Guy Saval, Geo. T. Baker, P. M. Baker, P. W. Baker, all Nevada; J. M. Lockhart, Ely, Nevada.

Officers—President, Geo. T. Baker; Vice-President, P. M. Baker; Treasurer and Manager, Guy Saval, all of Baker, Nevada.

Bell Telephone Company of Nevada

Directors—F. W. Eaton, G. E. McFarland, H. T. Scott, all of San Francisco.

Officers—President, G. E. McFarland; Vice-Presidents, H. T. Scott Pillsbury; Secretary and Treasurer, F. W. Eaton; General Manager, J. C. General Auditor, F. C. Phelps; General Counsel, E. S. Pillsbury, all of San Francisco.

Beowawe Mercantile Company

Directors—G. D. Shultes, Frances Shultes, F. E. Leonard, all of Nevada.

Officers—President and General Manager, G. D. Shultes; Vice-President, Frances Shultes; Secretary and Treasurer, F. E. Leonard, all of Nevada.

Bridgeport Telephone and Telegraph Company

Sole Owner—A. S. Bryant, Bridgeport, Cal. Sold during 1917 to Valley Land and Cattle Company, Topaz, Cal.

Bullfrog District Telephone Company

Sole Owner—Jesse Christensen, Beatty, Nevada.

Churchill County Telephone and Telegraph System

Directors—County Commissioners C. L. Benadum, W. H. Williams, W. ler, all of Fallon, Nevada.

Officers—Above-named County Commissioners and General Manager, Coniff, all of Fallon, Nevada.

L. H. Clar Telephone Line, Palisade-Eureka

Sole Owner—L. H. Clar, San Francisco, Cal.

Consolidated Power and Telephone Company

Directors—Ed. W. Clark, Jno. S. Park, W. S. Park, all of Las Vegas, Nevada.
Officers—President, Ed. W. Clark; Secretary and Treasurer, Jno. S. Park;
Superintendent, W. S. Park, all of Las Vegas, Nevada.

Elko County Telephone and Telegraph Company

Directors—W. T. Smith, San Francisco; A. W. Hesson, C. B. Henderson, C. H. Prentice, J. J. Hylton, all of Elko, Nevada.

Officers—President, W. T. Smith, San Francisco; Vice-President, A. W. Hesson; Treasurer, John Henderson; Secretary and General Manager, C. H. Prentice, all of Elko, Nevada.

Golconda Telephone and Power Company

Directors—William Kent and Jno. E. Webb of Kentfield, Cal.; A. E. Kent and Stewart G. Mollin of Golconda, Nevada; John G. Taylor of Lovelock, Nevada.

Officers—President and General Manager, Jno. E. Webb, Kentfield, Cal.; Vice-President, John G. Taylor, Lovelock, Nevada; Secretary, S. G. Mollin, Golconda, Nevada; Superintendent, C. B. Welshons, Winnemucca, Nevada.

Interstate Telegraph Company

Directors—A. B. West and C. O. Poole, of Riverside, Cal.; W. E. Porter and L. C. Phipps, Jr., of Denver, Colorado; F. M. Hess, Bishop, Cal.

Officers—President, A. B. West, Riverside, Cal.; Vice-President and General Manager, F. M. Hess, Bishop, Cal.; Vice-President and Treasurer, L. C. Phipps, Jr., Denver, Colo.; Secretary, W. E. Porter, Denver, Colo.; Assistant Secretary and Auditor, P. R. Ferguson, Riverside, Cal.; Assistant Treasurer, A. S. Cooper, Riverside, Cal.; Attorney, I. B. Potter, Riverside, Cal.; Superintendent, Vernon Wilder, Bishop, Cal.

Mason Valley Telephone and Telegraph Company

Directors—G. A. Schneider, Buffalo, N. Y.; Gilbert Briggs, H. P. Karge, Alfred Karge, W. L. Karge, all of Carson City, Nevada.

Officers—President, G. A. Schneider, Buffalo, N. Y.; Vice-President, Gilbert Briggs; Secretary and Treasurer, H. P. Karge; General Manager, Alfred Karge, all of Carson City, Nevada.

Moapa Valley Telephone Company

Directors—S. H. Wells, Kaolin, Nevada; B. F. Bonelli, St. Thomas, Nevada; S. R. Whitehead, W. L. Jones, J. M. Lytle, all of Overton, Nevada.

Officers—President, S. H. Wells, Kaolin, Nevada; Vice-President, W. L. Jones, Overton, Nevada; Secretary, Treasurer and General Manager, W. H. Lyon, Overton, Nevada.

Nevada, California and Oregon Telegraph and Telephone Company

Directors—Scott Hendricks, W. E. Hills, A. A. Rosenshine, all of San Francisco, Cal.; A. J. Matthews and Jules Alexander of Susanville, Cal.

Officers—President, Scott Hendricks, San Francisco; Vice-President and General Manager, A. J. Matthews, Susanville, Cal.; Vice-President, A. A. Rosenshine, San Francisco; Secretary and Treasurer, W. E. Hills, San Francisco.

Nevada Central Railroad Company—Telegraph Department

Directors and Officers—See report of Nevada Central Railroad Company.

Nevada Consolidated Telephone and Telegraph Company

Directors—Alfred Karge, Louise J. Sanford, Nell Lammon, all of Carson Nevada.

Officers—President and General Manager, Alfred Karge; Vice-President, Nell Lammon; Secretary and Treasurer, Mrs. Louise J. Sanford, all of Carson City, Nevada.

Nevada Interurban Telephone Company

Directors—W. N. McGill, J. H. Gallagher, M. T. Collins, all of Ely, Nevada; J. C. Riordan, Lund, Nevada; J. L. Whipple, Sunnyside, Nevada.

Officers—President, W. N. McGill, Ely, Nevada; Vice-President, J. C. Riordan, Lund, Nevada; Secretary and Treasurer, E. C. Hair, Ely, Nevada; Superintendent, J. L. Whipple, Sunnyside, Nevada.

Nevada Telephone-Telegraph Company

Directors—George Wingfield, Reno, Nevada; W. L. Rennie, Sacramento, California; J. M. Gregory, J. M. Gilfoyle, F. G. Waterhouse, W. R. Williams, and Douglass, all of Tonopah, Nevada.

Officers—President, George Wingfield, Reno, Nevada; Vice President, General Manager, F. G. Waterhouse, Tonopah, Nevada; Treasurer, J. M. Gilfoyle, Tonopah, Nevada; Secretary, J. Clarence Kind, Tonopah.

Northern Nevada Telephone and Telegraph Company

Directors—A. W. Sewell, K. M. Sewell, Oscar Miller, all of Tuscarora, Nevada; J. L. Winter, White Rock, Nevada.

Officers—President and Superintendent, A. W. Sewell; Secretary and Treasurer, K. M. Sewell, of Tuscarora, Nevada.

Postal Telegraph Cable Company

Directors—C. H. Mackay, Edward Reynolds, C. P. Bruch, C. C. Adams, New York.

Officers—President, C. H. Mackay; Vice-Presidents, Edward Reynolds, C. P. Bruch; Secretary, W. B. Dunn; Treasurer, J. J. Cardona, New York.

Reese River Telephone Company

Directors—Geo. Keough, Samuel Worthington, T. J. Bell, Joseph Walsh, N. Dieringer, all of Austin, Nevada.

Officers—President, Geo. N. Dieringer; Vice-President, T. J. Bell; Treasurer, Joseph Walsh; General Manager, Geo. Keough.

Searchlight Western Telephone System

Sole Owner—James Cashman, Searchlight, Nevada.

The United Farmers Telephone and Telegraph Company

Directors—E. Christensen and E. J. Phillips, Gardnerville, Nevada; V. D. Park, Minden, Nevada; Fritz Schacht, Genoa, Nevada; R. W. Bassman, Genoa, Nevada.

Officers—President, E. Christensen, Gardnerville, Nevada; Vice-President, Fritz Schacht, Genoa, Nevada; Secretary and General Manager, E. J. Phillips, Gardnerville, Nevada; Treasurer, W. D. Park, Minden, Nevada.

Utah, Nevada and Idaho Telephone Company

Directors—J. F. Judge, H. H. Hempstead, A. C. Ellis, Jr., Hugh L. Thomas of Salt Lake City, Utah; R. L. Douglass, Fallon, Nevada; W. O. Baber, Sr., of McDermitt, Nevada; and E. E. Harrison (deceased), of Ogden, Utah.

Officers—President, J. F. Judge; Treasurer and Superintendent, Hugh L. Thomas; Secretary, H. H. Hempstead, all of Salt Lake City, Utah.

Western Union Telegraph Company

Directors—W. V. Astor, Newcomb Carlton, R. C. Clowry, H. W. DeForest, C. M. Depew, William Fahnestock, D. G. Geddes, R. S. Lovett, E. G. Merrill, P. A. Rockfeller, J. H. Schiff, M. L. Schiff, J. J. Slocum, James Stillman, W. H. Truesdale, W. K. Vanderbilt, Jr., A. H. Wiggin, all of New York; Oliver Ames, Boston, Mass.; H. A. Bishop, Bridgeport, Conn.; B. F. Bush, St. Louis, Mo.; Chauncey Keep, Chicago, Ill.

Officers—President, Newcomb Carlton; First Vice-President, G. W. E. Atkins; Vice-President and General Counsel, Rush Taggart; Vice-President in Charge of Commercial Department, J. C. Willever; Vice-President in Charge of Traffic, W. N. Fashbaugh; Vice-President in Charge of Plant and Engineering, G. M. Yorke; Vice-President and Comptroller, E. Y. Gallaher; Treasurer, Louis Dresdner; Secretary, A. F. Burleigh; General Auditor, H. W. Ladd; General Attorney, A. T. Benedict, all of New York; European Representative, Stanley J. Goddard, London, England.

White Pine Telephone Company

Directors—C. A. Walker, Arthur Smith, J. W. Biggane, all of Ely, Nevada.

Officers—President, Chas. A. Walker; Vice-President, Arthur Smith; Secretary and Treasurer, J. W. Biggane; General Manager, J. S. Bennett, all of Ely, Nevada.

Yerington Electric Company

Directors—J. I. Wilson, E. R. Lam, C. W. Gallagher, all of Yerington, Nevada.

Officers—President, J. I. Wilson; Vice-President and Treasurer, C. W. Gallagher; Secretary and General Manager, E. R. Lam.

**T OF AUTHORITIES ISSUED BY THE RAILROAD COMMISSION OF
NEVADA GRANTING RAILROADS AND OTHER COMPANIES THE
PRIVILEGE OF REDUCING RATES ON LESS THAN THE STATU-
TORY NOTICE OF THIRTY DAYS. COMMENCING WITH JANUARY
1, 1917, AND ENDING NOVEMBER 15, 1918.**

AUTHORIZATIONS

Authority No. 496—Nevada Northern Railway, applicant. Asking authority to file supplement to tariff providing for the acceptance of commutation tickets on main-line trains during fuel shortage. Request received and granted January 12, 1917.

Authority No. 497—Bullfrog Goldfield Railroad, applicant. Authority requested to cancel freight tariffs NRC 29 and 30, account no movement thereunder. These tariffs carried rates on stocks of merchandise in carloads from Rhyolite to Goldfield and Tonopah, Nevada. Application received January 10, 1917, granted January 16, 1917.

Authority No. 498—Bullfrog Goldfield Railroad, applicant. Request for authority to establish rate of \$3.50 per cord on second-hand ties, Rhyolite to Tonopah, Nevada. Application received January 23, 1917, granted January 24, 1917.

Authority No. 499—Las Vegas and Tonopah Railroad, applicant. Request for authority to establish rates retroactive to December 1, 1916, on locomotives and tenders including switch engines on own wheels of 75 cents per mile, and on railway cars including passenger and freight cars of 15 cents per mile, to apply between Beatty and Las Vegas, Nevada. Request received February 7, 1917, and granted the same day.

Authority No. 500—Virginia and Truckee Railway, applicant. Authority asked to publish rate of \$1.50 per ton to apply on sand, gravel, and crushed rock, carloads, Reno to Mound House, Nevada. Request received and granted March 3, 1917.

Authority No. 501—Virginia and Truckee Railway, applicant. Request for authority to publish rate of \$1.50 per ton to apply on fire clay, carloads, and in mixed carloads with brick, minimum 30,000 pounds, from Reno to Mound House, Nevada. Request received and granted March 3, 1917.

Authority No. 502—Nevada Copper Belt Railroad, applicant. Request for authority to establish rates on hog feed, carloads, as follows: Yerington to Colony, Nevada, 10 cents per hundredweight; Mason to Colony, Nevada, 9 cents per hundredweight; and Nordyke to Colony, Nevada, 8 cents per hundredweight. Request received March 7, 1917, granted March 13, 1917.

Authority No. 503—Bullfrog Goldfield Railroad, applicant. Application for authority to establish, and cancel on short notice, rate of 5 cents per hundred pounds, to apply on straight or mixed carloads of second-hand machinery, corrugated iron, lumber, gasoline engines, motors and junk, minimum weight 30,000 pounds, from Rhyolite to Beatty, Nevada.

Request received March 3, 1917. Company authorized to establish rates as requested but denied the privilege of canceling on less than thirty days' notice. Authority issued March 3, 1917.

Authority No. 504—Southern Pacific Company, applicant. Request

for authority to publish rate of 20 cents per hundredweight on haycarloads, from Lovelock to Tecoma, Nevada. Request received and granted March 28, 1917.

Authority No. 505—Golconda Telephone and Power Company, applicant. Request for authority to publish the following toll rates for telephone service from Battle Mountain, Nevada.

Battle Mountain to Copper Canyon.....	20 cents for initial period
Battle Mountain to Galena.....	20 cents for initial period
Battle Mountain to Copper Basin.....	15 cents for initial period
Battle Mountain to 25 Ranch.....	15 cents for initial period
Battle Mountain to Isenhood Ranch.....	25 cents for initial period
Minimum telegraph rate from Battle Mountain to all of the above-named points.....	25 cents

Request received March 31, 1917, granted April 3, 1917.

Authority No. 506—Southern Pacific Company, applicant. Authority requested to establish rate of 25 cents per hundredweight on haycarloads, from Reno to Tecoma, Nevada. Request received and granted April 12, 1917.

Authority No. 507—Los Angeles and Salt Lake Railroad, applicant. Request for authority to publish rate of one hundred and sixty-six and two-thirds of the one-car rate for two cars of demonstrating machinery when used by one demonstrator. Rate to apply between points in Nevada on applicant's line of railroad. Application received April 13, 1917, granted April 21, 1917.

Authority No. 508—Bullfrog Goldfield Railroad, applicant. Request for authority to establish rate of 5 cents per hundredweight, retroactive to April 10, 1917, to apply on second-hand store and bar fixturecarloads, minimum weight 30,000 pounds, from Rhyolite to Beatty Nevada. Request received and granted April 16, 1917.

Authority No. 509—Tonopah and Goldfield Railroad, applicant. Request for permission to transport, free of charge, the members of the Tonopah Band, from Tonopah to Goldfield, Nevada, and return account Loyalty Day Celebration at Goldfield. Application received April 22, 1917, granted April 24, 1917.

Authority No. 510—Intermountain Demurrage Bureau, applicant. Request for authority to make various changes in demurrage rules and rates. Upon investigation it was found that the changes proposed would result in increased rates to the shipping public and the Commission was without authority to allow the same to take effect on less than thirty days' notice. Application received April 23, 1917, denied April 24, 1917.

Authority No. 511—Bullfrog Goldfield Railroad, applicant. Application received for authority to reissue local freight tariff 63 on one day's notice, correcting same to read "Between Rhyolite and Beatty" instead of "From Rhyolite to Beatty." Request received and granted April 24, 1917.

Authority No. 512—Western Pacific Railroad, applicant. Request for authority to restore all rates in supplement No. 2 to freight tariff NRC 80 on one day's notice, supplement having been canceled in error. Application received April 25, 1917, granted April 27, 1917.

Authority No. 513—Tonopah and Goldfield Railroad, applicant. Application received for authority to publish rate of \$7 per ton on second-hand lumber and timbers, carloads, and rate of \$10 per ton on second-hand sampling-plant material from Millers to Hazen, Nevada. Request received and granted May 5, 1917.

Authority No. 514—Western Pacific Railroad, applicant. Authority requested to cancel freight tariff No. 214 naming rate of 15 cents per car-mile for transportation of air brake instruction car No. 101. Application received May 12, 1917, denied May 21, 1917, account change resulting in increased rate.

Authority No. 515—Nevada Transportation Co., applicant. Request for authority to establish charges on one day's notice to cover transportation of circus from Palisade to Eureka, Nevada, and return. Request received and granted May 17, 1917.

Authority No. 516—Tonopah and Goldfield Railroad, applicant. As tariff No. 55 embodying rates authorized by the Commission under authority No. 513 expired by tariff provision June 7, 1917, and as shippers had not completed forwarding their material from Millers to Hazen, Nevada, the Commission was requested to grant authority to extend the life of the tariff to June 30, 1917. Request received and granted June 8, 1917.

Authority No. 517—Southern Pacific Co., applicant. Request for authority to withdraw supplement No. 3 to freight tariff 188-E NRC 62, account same having been filed in error. Application received June 16, 1917, and request granted the same date, as withdrawal of supplement in question did not increase rates.

Authority No. 518—Bullfrog Goldfield Railroad, applicant. Application received for authority to amend freight tariff NRC 34, retroactive in effect to June 20, 1917, so as to include transportation of all freight in carload lots, minimum weight 30,000 pounds, between Rhyolite and Beatty. Request received and granted June 23, 1917.

Authority No. 519—Pacific Freight Tariff Bureau, applicant. Request for authority to cancel all supplements to freight tariffs carrying 15% increases. Request received and granted July 10, 1917.

Authority No. 520—Virginia and Truckee Railway, applicant. Application received for authority to establish on one day's notice schedule of party excursion fares to cover new automobile rail service. Application received and granted July 27, 1917.

Authority No. 521—Virginia and Truckee Railway, applicant. Request for authority to make effective August 8, 1917, a thirty-day commutation rate of \$27 for thirty round-trips between Carson City and Reno, Nevada. Request received and granted August 7, 1917.

Authority No. 522—Nevada Central Railroad, applicant. Request for authority to publish on one day's notice rates of 42½ cents per hundred pounds on mining machinery, carloads, and 26½ cents per hundred pounds on mining timbers and lumber, carloads, from Battle Mountain to Ledlie, Nevada. Request received and granted August 20, 1917.

Authority No. 523—Nevada Copper Belt Railroad, applicant.

Request received for authority to publish on two days' notice 55 cents per ton on lime rock, carloads, from Ludwig to Wabaska, Nevada, and 5 cents per hundredweight on scrap iron from M. Wabaska, Nevada. Request received August 26, 1917, granted August 27, 1917.

Authority No. 524—Southern Pacific Co., applicant. Application received for authority to name rate of 80 cents per ton on lime rock, carloads, minimum weight 80,000 pounds, Wabaska to Fallon, Nevada. Request received and granted August 27, 1917.

Authority No. 525—Tonopah and Goldfield Railroad, applicant. Authority requested to publish and make effective on one day's notice rate of 40 cents per hundredweight on old warehouse material, carloads, Goldfield to Wabaska, Nevada. Request received and granted September 14, 1917.

Authority No. 526—Tonopah and Goldfield Railroad, applicant. Request for authority to publish and make effective immediately rate of 40 cents per ton on ores not exceeding \$10 per ton valuation, carloads, minimum weight 40,000 pounds, Tonopah to Millers, Nevada. Request received and granted September 20, 1917.

Authority No. 527—Nevada Northern Railway, applicant. Application received for authority to publish rate of 25 cents per ton on all values, carloads, from Copper Flat and Ruth to Kimberly, Nevada. Request received and granted September 21, 1917.

Authority No. 528—Southern Pacific Co., applicant. Request for authority to publish rate of \$180 to cover the transportation of narrow-gage locomotive from Nenzel to Sparks, Nevada, and return. Request received and granted October 17, 1917.

Authority No. 529—Nevada Copper Belt Railroad, applicant. Under this authority, the Nevada Copper Belt Railroad Co. was authorized to protect the less-than-carload rating on nine thousand pounds of iron billed from Yerington to Wabaska, Nevada. Application received October 24, 1917, granted October 25, 1917.

Authority No. 530—Pacific Freight Tariff Bureau, applicant. Request for authority to amend item No. 295 of exception schedule 1-F on one day's notice, so as to provide that when open cars 44 feet 6 inches in length, inside measurement, are furnished for the carrier's convenience, for shipments of hay and straw, minimum load weight will be the same as that provided for closed cars of same length. Request received and granted October 30, 1917.

Authority No. 531—Bell Telephone Co. of Nevada, applicant. Request for authority to establish telephone toll rates to and from toll station known as Williams, located in Washoe County, Nevada. Application received and granted November 8, 1917.

Authority No. 532—Southern Pacific Co., applicant. Application received for authority to publish rates of \$2.65 per ton on ore per ton valuation, \$4 per ton on ore of \$50 per ton valuation, \$5.65 per ton on ore of \$100 per ton valuation, carloads, Soda Lake to Toulon, Nevada. Request received and granted November 10, 1917.

Authority No. 533—Southern Pacific Co., applicant. Request

authority to publish on less than statutory notice the following rates on soap in carloads:

Reno to Winnemucca.....	45 cents per cwt.
Reno to Golconda.....	45 cents per cwt.
Reno to Elko.....	50 cents per cwt.
Reno to Cobre.....	56 cents per cwt.
Reno to Montello.....	56 cents per cwt.

Request received November 12, 1917, and granted the same date.

Authority No. 534—Bell Telephone Co. of Nevada, applicant. Application for authority to establish a temporary toll station at Camp Six, Washoe County, Nevada, a point approximately four miles north of Reno. As this was a new toll station it was also requested that the company be allowed to establish toll rates to and from the point on less than thirty days' notice. Application received November 11, 1917, granted November 14, 1917.

Authority No. 535—Tonopah and Goldfield Railroad, applicant. Request for permission to establish rate of 25 cents per ton for switching ore from all points in Tonopah yards to the Belmont Mill at that point. Request received and granted Nov. 30, 1917.

Authority No. 536—Tonopah and Goldfield Railroad, applicant. Application received for authority to publish and make effective on one day's notice rate of 30 cents per hundredweight on building tile, carloads, minimum weight 40,000 pounds, from Goldfield to Fallon, Nevada. Request received and granted November 30, 1917.

Authority No. 537—Western Pacific Railroad, applicant. Requesting authority for permission to publish and make effective on one day's notice a rate of 18½ cents per hundredweight on flour, carloads, minimum weight 30,000 pounds, from Elko to Tobar, Nevada. Application received December 2, 1917, granted December 3, 1917.

Authority No. 538—Las Vegas and Tonopah Railroad, applicant. On December 6, 1917, the Las Vegas and Tonopah Railroad Co. filed its Rate Issue No. 50, NRC No. 63, naming rate of 25 cents per hundred pounds on wheels, locomotive and car, mounted or unmounted; also driving-wheel tires, any quantity, between Las Vegas and Beatty, Nevada. A letter from the company explained that this tariff had been made effective retroactive to October 30, 1917, in order to take care of shipments which had moved on and after that date. The Commission was requested to approve this tariff. On December 6, 1917, the Commission issued its formal approval of the same.

Authority No. 539—Under the heading of Case 435 relating to rates on coal from Coaldale to various other Nevada points, the Tonopah and Goldfield Railroad Co. had signified its willingness to transport free of charge one or two cars of coal to each of the towns of Tonopah, Goldfield, and Mina, Nevada. The complainant in Case 435 requested that the Commission authorize the Tonopah and Goldfield Railroad to move these shipments when ready for forwarding. As this was a case which was purely experimental in order to ascertain whether the coal was marketable, the authority was granted on December 11, 1917. It later developed that the shipments never moved as the parties interested did not produce the coal.

Authority No. 540—Nevada Copper Belt Railroad, applicant. Authority requested to publish and make effective immediately rate of 9 cents per hundredweight on potatoes, carloads, Yerington to Las Vegas, Nevada. Request received and granted December 13, 1917.

Authority No. 541—Southern Pacific Co. applicant. Request for authority to publish special excursion fare from Mina to Candelaria, Nevada, and return of \$2.25, the same to become effective December 18, 1917, and to expire December 20, 1917. Request received and granted December 18, 1917.

Authority No. 542—Nevada Copper Belt Railroad, applicant. Request for authority to publish and make effective immediately rate of 10 cents per hundredweight on well-boring machinery between Yerington and Mason, Nevada. Request received and granted December 18, 1917.

Authority No. 543—Tonopah and Goldfield Railroad, applicant. Authority requested for permission to publish and make effective various reduced rates on ore in carload lots from Goldfield to Tonopah, Nevada. Request received December 30, 1917, and granted December 31, 1917.

Authority No. 544—Intermountain Demurrage Bureau, applicant. On January 11, 1918, the Intermountain Demurrage Bureau, under the direction of the United States Director-General of Railroads, requested authority to increase certain demurrage rates effective January 1, 1918, in order to relieve the car shortage by forcing the prompt loading and unloading of freight cars. The Commission offered no objection to the proposed changes, in order to cooperate fully with the United States Government in handling matters of this kind.

Authority No. 545—Nevada Short Line Railway, applicant. Request for authority to file supplement No. 2 to freight tariff 1-B, increasing certain freight rates, also making certain changes by increasing passenger fares to become effective February 1, 1918. Application received January 18, 1918, and denied the same date.

Authority No. 546—Tonopah and Goldfield Railroad, applicant. Request for authority to move five or six cars of ore between Tonopah and Main Line Junction for weighing without assessing charges. Request received and granted January 24, 1918.

Authority No. 547—Tonopah and Goldfield Railroad, applicant. Application for authority to establish rate of 30 cents per ton for check-weighing only on carload freight consigned to the Tonopah and Goldfield Development Company's mill at Tonopah when moving via Main Line Junction. Request received and granted January 25, 1918.

Authority No. 548—Intermountain Demurrage Bureau, applicant. On February 3, 1918, the Intermountain Demurrage Bureau, under the Director General's order No. 7, requested authority to make effective February 10, 1918, certain changes in demurrage rules then in effect. On February 4, 1918, the Commission authorized the changes.

Authority No. 549—Southern Pacific Co., applicant. Request for authority to publish and make effective on one day's notice rate of 10 cents per standard car on stock cattle Lovelock to Beowawe, Nevada, and return. Request received and granted February 12, 1918.

Authority No. 550—Pacific Freight Tariff Bureau, applicant.

Request for authority to cancel Rule 7 of Exception Sheet 1-F and similar rules in other Pacific Freight Tariff Bureau tariffs. This rule applied to the marking of freight packages, and upon the cancellation of the same, Rule 7 of Supplement 2 to Western Classification 55 was made effective. Application received and granted March 13, 1918.

Authority No. 551—Bullfrog Goldfield Railroad, applicant. Application received for authority to publish on one day's notice rate of 5 cents per hundred pounds from Beatty to Goldfield, Nevada, to apply on pipe and fittings, iron or steel, straight seam riveted and spiral seam sheet-iron pipe and well casing not over twelve inches in diameter, carloads, minimum weight 30,000 pounds. Application received and granted March 18, 1918.

Authority No. 552—Pacific Freight Tariff Bureau, applicant. Request for authority to amend Item 140 of Exception Sheet 1-F by including barley flour at the same rating as wheat and other flour. Request received and granted March 19, 1918.

Authority No. 553—Southern Pacific Co., applicant. Application for authority to publish on one day's notice rate of \$1.50 per ton on coke, carloads, minimum weight 40,000 pounds, Fallon to Wabuska, Nevada, rate to expire thirty days after date of publication. Application received and granted March 31, 1918.

Authority No. 554—Southern Pacific Co., applicant. Request for authority to publish, effective May 1, 1918, new uniform diversion and reconsignment rules as prescribed by the Interstate Commerce Commission. Request received and granted April 17, 1918.

Authority No. 555—Nevada Copper Belt Railroad Co., applicant. Request for authority to render free service to the State of Nevada by placing motor car at the service of the members of the State Highway Commission at such time as they might desire to make a special trip of inspection of the proposed highway through Wilson Canyon, Lyon County, Nevada. Request received and granted April 17, 1918.

Authority No. 556—Nevada Northern Railway, applicant. Application received for authority to establish rates of \$10 each on ballast spreaders on own wheels between Kimberly, Ruth, Keystone and East Ely; \$15 each between Kimberly, Ruth, Keystone and McGill; and \$7.50 each between East Ely and McGill. Request received and granted April 17, 1918.

Authority No. 557—Pacific Freight Tariff Bureau, applicant. Request for authority to publish on less than statutory notice new reconsignment and diversion rules as prescribed by the Interstate Commerce Commission. Application received April 18, 1918, and granted the same date.

Authority No. 558—Southern Pacific Co., applicant. Request for authority to publish rate of \$5 per car for interchange switching at Reno, Nevada, to cover the movement of cars between industry tracks of the Western Pacific Railroad, Southern Pacific Co., and Virginia and Truckee Railway. Application received April 22, 1918, granted April 27, 1918.

Authority No. 559—Southern Pacific Co., applicant. Request for authority to publish the following provision and rate covering the movement of special passenger cars: "For the movement of a special

passenger car of any description, the published tariff fare to and return for each member of the party traveling in the special car with a minimum of thirty full fares from starting point to destination, minimum to be \$50 per car for each movement."

Applicant stated that this request was made under orders of the Director-General of Railroads of the United States. As the Commission had received no notice from the Government regarding the matter the question was taken up by telegraph with the authorities in Washington. Upon receipt of information from the Director-General the Commission advised the Southern Pacific Co. that it was the object to the increased rates being established on less than thirty days notice. Application received April 21, 1918, letter to applicant May 4, 1918.

Authority No. 560—Western Pacific Railroad, applicant. This application was for authority to publish on less than statutory notice the same provisions applying to special car service as outlined in Authority No. 559 (Application of Southern Pacific Co.). Application received April 27, 1918, letter to applicant May 4, 1918.

Authority No. 561—Pacific Freight Tariff Bureau, applicant. Request for authority to amend Tariff 32-B NRC 68, making changes in demurrage rules and regulations as ordered by the United States Railroad Administration. Request received April 30, 1918, granted the same date.

Authority No. 562—Tonopah and Goldfield Railroad, applicant. Request for authority to publish and make effective immediately a rate of \$5 per car on ore from bins of the Goldfield Consolidated Mining Co. to its mill in Goldfield, Nevada. Request received and granted May 1, 1918.

Authority No. 563—Los Angeles and Salt Lake Railroad, applicant. This application was for authority to publish on less than statutory notice the same provisions applying to special car service as outlined in Authority No. 559 (Application of Southern Pacific Co.). Application received May 5, 1918, letter to applicant May 7, 1918.

Authority No. 564—Intermountain Demurrage Bureau, applicant. Request for authority to cancel Paragraph 7, Section B, Rule 2-C of Supplement 12 to Demurrage Tariff NRC 7, providing 24 hours free time for any other purpose than loading and unloading. Upon investigation it was found that cars held by shippers for other purposes than loading or unloading would be taken care of by the Commission. Paragraphs 4 and 5, Section B of Rule 2 in the tariff above referred to. Application received May 10, 1918, granted May 20, 1918.

Authority No. 565—Nevada Northern Railway, applicant. Application received for authority to publish, effective May 14, 1918, the rates between points on applicant's line and Cobre and Virginia, Nevada, account War Conference to be held at Reno, May 14, 1918. Request received and granted May 13, 1918.

Authority No. 566—Virginia and Truckee Railway, applicant. Request for authority to publish on less than statutory notice a rate of ten cents per hundredweight on straw, carloads, minimum 20,000 pounds, from Minden to Reno, Nevada. Application received May 13, 1918, and granted May 13, 1918.

Authority No. 567—Nevada Northern Railway, applicant. Request for authority to make half-fare rates authorized under Authority No. 65, effective May 15, 1918, instead of May 16, 1918. Request received and granted May 14, 1918.

Authority No. 568—Virginia and Truckee Railway, applicant. Application received for authority to publish and make effective May 5, 1918, special excursion tariff naming a rate of one fare for the round trip from all stations on applicant's road to Reno, Nevada, account War Conference at Reno. Request received and granted May 5, 1918.

Authority No. 569—Nevada Northern Railway, applicant. Request for authority to reissue on less than statutory notice all class and commodity freight rates applicable to Nevada intrastate business, making no increases in same but raising rates 25 per cent on interstate business, in line with Director-General's Order No. 28. Request received and granted June 10, 1918.

Authority No. 570—Virginia and Truckee Railway, applicant. Request for authority to publish, effective July 11, 1918, special round-trip fare of \$1 between Reno and Bowers, Nevada; also ten-ride commutation fares between Carson City and Stewart, Empire, Brunswick, and Merrimac, Nevada, at a rate of \$1.25. Application received July 1, 1918, granted July 11, 1918.

Authority No. 571—Bullfrog Goldfield Railroad, applicant. Application for authority to establish charge of \$3.10 per car to cover switching between points in applicant's yard at Goldfield, Nevada, in order to comply with Director-General's Order No. 28. Application received July 14, 1918, letter to applicant under date of July 17, 1918, stating that Commission would interpose no objection to the proposed rate.

Authority No. 572—Virginia and Truckee Railway, applicant. Request for authority to publish and make effective on one day's notice various reductions in week-end and thirty-day round-trip passenger fares and also party fares between points on applicant's line of railroad. Request received and granted July 18, 1918.

Authority No. 573—Tonopah and Goldfield Railroad, applicant. Request for authority to publish and make effective on five days' notice rate of 87 cents per ton on ore, carloads, minimum weight 10,000 pounds from Millers to Tonopah, Nevada. Application received August 18, 1918, granted August 20, 1918.

Authority No. 574—Virginia and Truckee Railway, applicant. Request for authority to publish and make effective September 6, 1918, an excursion fare of 50 cents for adults and 25 cents for children from Carson City to Bowers, Nevada, and return, account annual picnic for the children of the State Orphanage. Request received and granted September 5, 1918.

Authority No. 575—Bullfrog Goldfield Railroad, applicant. Application received for authority to publish and make effective immediately rate of 75 cents per mile on steam locomotives and tenders on their own wheels between Goldfield and Beatty, Nevada. Request received and granted September 21, 1918.

Authority No. 576—Pacific Freight Tariff Bureau, applicant.

Request for authority to issue supplements to various Bureau by amending same to carry appropriate NRC numbers which previously been omitted owing to the existing orders issued Director-General. Application received September 29, 1918, granted September 30, 1918.

Authority No. 577—Pacific Freight Tariff Bureau, applied for authority to amend Exception Sheet No. 1-F, NRC increasing estimated weights on lemons in certain sized boxes, to become effective November 1, 1918. Request received October 1, 1918, denied October 9, 1918.

Authority No. 578—Las Vegas and Tonopah Railroad, applied for authority to cancel all freight and passenger tariffs effective November 1, 1918. Application received October 8, 1918, granted on the same day. (See Case 474.)

Authority No. 579—Tonopah and Goldfield Railroad, applied for authority to publish, effective October 1, 1918, rate of 80 cents per ton on ore, irrespective of valuation, load lots, minimum weight 60,000 pounds, to apply from Klondike Goldfield, Nevada. Application received and granted October 8, 1918.

Authority No. 580—Pacific Freight Tariff Bureau, applied for authority to amend all tariffs naming intrastate rates on wheat flour, carloads, to provide that such rates shall apply on flour manufactured from barley, beans, buckwheat, corn, potatoes, rice, rye, wheat, or a mixture of any two or more. Application received November 10, 1918, granted November 11, 1918.

GENERAL EXPENSES OF THE RAILROAD COMMISSION OF NEVADA FOR THE PERIOD FROM JANUARY 1, 1917, TO AND INCLUDING NOVEMBER 30, 1918.

Books and periodicals.....	
Drayage.....	
Express charges.....	
Furniture and office fixtures.....	
National Association Railway and Utilities Commissioners.....	
Office stenographers and clerks.....	
Outside stenographic fees.....	
Printing.....	
Paper and Envelopes.....	
Stamps.....	
Stationery, other than paper.....	
Telegraph Service.....	
Telephone Service.....	
Travelling expenses.....	
Typewriter repairs and supplies.....	
Miscellaneous.....	
Total.....	\$

NOTE—Received from the sale of reports and maps during the period mentioned above, \$25.46; received from the sale of transcripts and turned over to the State Treasurer for the general fund, \$77.70; in July, 1917, received from the Transcontinental Scrip Bureau on scrip purchased amount of \$22.45. This sum was expended in stamps and deducted from traveling expense account.

**TARIFF, ACCOUNTING AND GENERAL RULINGS OF THE
RAILROAD COMMISSION OF NEVADA**

ACCOUNTING CIRCULAR NO. 1

There being numerous complaints made to this Commission, informally, by shippers and consignees in the State of Nevada, respecting the rendering of freight bills, by several railroads operating in the State of Nevada, the freight bills referred to showing, in some instances, the point of origin of shipment, destination, character of goods, weight, and charges, but eliminating the rates upon which charges are assessed; and in other instances showing advanced charges and eliminating advanced charged rates, thus making it impossible for the average consignee to check his freight bills with any degree of accuracy, this Commission, after careful investigation of the matter, has deemed it advisable to make the following ruling to govern all railroads operating in the State of Nevada. It is, therefore,

Ordered: That all railroads operating in the State of Nevada, when rendering freight bills to consignees at the point of delivery of shipments, must show the rate assessed from point of origin to point of destination.

In all cases where freight bills carry advance charges, the rate or rates used in assessing the advanced charges must be shown, and also the rate or rates used in assessing the line charges, thus specifically naming the through rate.

This order is to take effect on September 1, 1909.

By order of the Commission:

E. H. WALKER, *Secretary*.

TARIFF RULING NO. 1

Carriers may provide in their tariffs that limited passenger tickets may be extended in cases of the illness of the passenger holding such ticket.

Tariffs must give the title of the officer who shall have authority to give such extension, and such officer shall be required by the carrier to keep a memorandum of each instance in which such extension is given, and the date upon which it is allowed. Such information shall be subject at any time to be called for by the Commission. This rule must be applied strictly and in good faith, and upon the carrier is placed the responsibility of strict conformity thereto.

Only such illness as makes travel dangerous to health of the traveler will justify the extension herein provided for. The extension may also be granted to one or more members of the family of the passenger who is ill when traveling together and to persons who are subject to an established quarantine.

Stopover privileges for a limited time may be granted for the same causes and under the same conditions and restrictions as justify extension of time upon limited tickets. No stopover privilege will be recognized as valid unless provisions therefor are made in the carrier's published tariffs.

RAILROAD COMMISSION OF NEVADA,

ATTEST: E. H. WALKER, *Secretary*.
Effective February 10, 1908.

H. F. BARTINE, *Chairman*.

TARIFF CIRCULAR No. 2A

To the Railroads Operating in Nevada:

Strictly excursion fares, covering a named and limited period established on less than the regular thirty-day notice.

To avoid the necessity of special application in cases of this kind the Commission has made a general order fixing the following-naming of notice of round-trip excursion fares, and carriers may govern themselves accordingly:

Fares for an excursion limited to a designated period of more than three days may be established, without further notice, upon giving a tariff two days in advance in two public and conspicuous places in the waiting-room of each station where tickets for such excursions are sold, and mailing a copy thereof to the Commission.

Fares for an excursion limited to a designated period of more than three days and not more than thirty days may be established upon like notice of five days.

Fares for a series of daily excursions, such series covering a period not exceeding thirty days, may be established upon a like notice of five days as to the entire series, and a separate notice of the excursions for each day covered by the series need not be given.

Fares for an excursion limited to a designated period exceeding thirty days will require the statutory notice, unless shorter time is allowed in special cases by the Commission.

RAILROAD COMMISSION OF NEVADA.

Issued June 19, 1908.

By E. H. WALKER, Secretary.

Effective June 19, 1908.

Tariff Circular No. 2 canceled.

TARIFF CIRCULAR No. 3

To the Railroads Operating in the State of Nevada:

Commencing immediately, all passenger and freight tariffs, and excursion notices, or rate notices of any kind, and all supplementary amendments to the same naming rates or fares affecting the interstate business of your road within the State of Nevada, must be numbered by Nevada Railroad Commission number.

The first tariff issued after the receipt of this circular letter naming rates described above should be numbered one, and all subsequent tariffs issued thereafter to be numbered consecutively. The number of each tariff should be preceded by the initials N. R. C., and the initials and number should be placed in either the upper right-hand corner of the tariff or the upper left-hand corner, and should be printed in bold type.

Where one issue supersedes another, reference of cancellation should be made beneath the N. R. C. number of the superseding tariff, and the number of the tariff canceled. Where portions of other tariffs are canceled reference to the tariff or tariffs and rates canceled must be specified on the first page or title page of the canceling tariff, showing in detail just what items have been canceled.

Please acknowledge receipt of this circular letter by return mail, advising this Commission of your compliance to the same and of the date, advising whether the matter is thoroughly understood.

RAILROAD COMMISSION OF NEVADA.

Issued May 26, 1909.

By E. H. WALKER, Secretary.

TARIFF RULING No. 4

Upon traffic picked up and laid down within the State of Nevada, by carrier or between carriers, line or interline, the through rate must not exceed the combination of local rates based upon terminal, junction, or main-line points.

Wherever it is found that the through rate to any given point does exceed the combination of local rates, the combination of locals must be protected by and through a request made of this Commission for permission to amend the through or local tariff, as the case may be, so as not to exceed the lower combination rates, making such amendment retroactive in effect to the date upon which the excessive through rate was named; provided, that no rate of this character shall be made retroactive in effect prior to the date this ruling becomes effective, in any case where such through tariff carries the provision that through rates named must be applied regardless of what lower combinations may be made. All tariffs carrying a provision of this kind must be immediately amended, striking out such provision as applies to Nevada intrastate traffic, effective the same date as this ruling.

Further, it is hereby ordered that in no case shall a rate be charged on any commodity exceeding the class rate applicable on such commodity. That is, wherever the application of the current Western Classification or Exceptions thereto and the class rate named makes a lower rate than the commodity rate named, the class rate must be applied; and wherever the commodity rate makes the lowest rate, it must be applied.

This ruling shall take effect May 1, 1910.

By order of the Commission:

Issued April 7, 1910.

E. H. WALKER, *Secretary*.

GENERAL RULING No. 1

In re the matter of switching low-grade commodities reaching Goldfield over the lines of the Tonopah and Goldfield Railroad:

Several informal complaints have been made to the Commission at various times by J. Gottstein and others, alleging error in weights of carload shipments of hay which were not weighed in transit and that charges were assessed on the basis of invoice weights.

Invoice weights should not be applied except in cases where it is impossible to secure track-scale weights.

The Tonopah and Goldfield Railroad maintain track scales at Main Line Junction, and at Goldfield, when necessary, use the track scales belonging to the Western Ore Purchasing Company. The said railroad company in reply to the aforesaid complaints have advised the Commission that they are agreeable to the application of either track-scale or invoice weights and have requested that a ruling be made in order that the question may be definitely settled.

On the other hand, Mr. Gottstein, in behalf of himself and other shippers, demands that they be accorded a free weighing service at Goldfield covering carload shipments of low-grade commodities when, in their judgment, said shipments appear to be short of weights.

We do not believe that this position is well taken and feel that if the shipments are weighed in transit at Main Line Junction, a point thirty-five miles north of Goldfield, and the waybill weights and charges cor-

rected to the actual weight determined at that point, such should, in every way, be satisfactory. If, however, on arrival at field there is further contention regarding the correctness of the weight, a reciprocal rule may be adopted. For example, if the variation in weight does not exceed 2,000 pounds in the reweighing at Goods Station, the consignee shall be entitled to the benefit of the corrected weight. If, however, the weight does exceed 2,000 pounds, the carrier shall pay to the carrier for the weighing service a charge not exceeding \$2.50 per car.

If, however, in reweighing there is a difference exceeding 2,000 pounds in favor of consignee, he shall have the benefit of the corrected weight and shall not be required to pay carrier for the service in connection with reweighing.

The complainant also insists that, where weights of carloads are challenged, the cars, after being made empty, should be weighed in order to secure correct weights of the same. Empty cars are weighed periodically by the companies that own them, and the weight is stenciled on each car. If the dealer has reason to believe the weight of the car, as marked on it, is incorrect, then he should have the right to have it weighed, but unless it is more than 500 pounds in excess of the tare indicates, he should pay the railway company for weighing and weighing an allowance not exceeding \$2.50 per car.

It is therefore ruled that all carload shipments of hay, lumber, brick, cement, and other low-grade commodities destined to Goods Station shall be reweighed at Main Line Junction on and after January 1, 1911, and waybill weights and charges accordingly corrected to conform to the actual scale weights.

RAILROAD COMMISSION OF NEVADA

Dated December 30, 1910.

By E. H. WALKER, Secretary

TARIFF RULING No. 5

To Railroads Operating in Nevada:

It is hereby ordered that all rates established on live stock and other commodity, between points in the State of Nevada, for the shippers to forward a trainload of a specified number of cars in order to enjoy the rate named, shall be so amended as to eliminate the load minimums and leave the rates in effect on single carload shipments.

This order shall take effect on August 1, 1911, and the rates referred to must be amended as ordered on or before that date.

RAILROAD COMMISSION OF NEVADA

Dated December 20, 1911.

By E. H. WALKER, Secretary

ACCOUNTING CIRCULAR No. 2

To the Accounting Officers of Railroads Operating in Nevada:

At a regular meeting of the Railroad Commission of Nevada on Wednesday, April 8, 1914, it was unanimously ordered that the following resolution be adopted, and that the railroads operating in the State of Nevada be required to comply with the same:

It appearing to the Commission that in all freight-rate cases of any importance brought before it the questions of density of traffic of intrastate freight moving between Nevada points together with the gross earnings per ton per mile accruing thereon, are of great importance in determining the questions

of reasonable rates, regardless of whether a case involves the movement of a single commodity between individual points or relates to a general readjustment of all class or commodity freight rates, either local or joint; it is, therefore,

Ordered: That during the months of May, 1914, and October, 1914, and following regularly two months in each year thereafter—namely, the months of March and October—all railroads operating in Nevada will be required to furnish this Commission with one copy of every local and joint or through freight waybill covering the movement of intrastate freight in Nevada issued each day during said months at every station on its company's line of railroad in the State of Nevada.

This order has been issued by virtue of the authority vested in the Commission by sections 13 and 20 of the Railroad Commission Law of Nevada. In view of the fact that the Commission is authorized to call for additional reports and data, it is thought that the method prescribed by the foregoing order will be less burdensome to the railroad companies than it would be if such information and data were called for specifically when required to meet special cases.

For your information will state that this resolution has been adopted in order that the Commission may at any time work up information relative to tonnage and earnings on freight moving between strictly Nevada points, without the necessity of throwing the burden of working up such data upon the carriers, or going to the expense of sending the Commission's employees to various points in the State to obtain such information.

All copies of waybills received by the Commission will be considered confidential, and files of such waybills will not be open to inspection by the public.

The Commission believes that it is familiar with the methods employed by the railroads operating in the State in waybilling freight, and therefore offers the following suggestions to carriers in order to enable them to comply with this order with little trouble and expense:

First—That an order be issued to all agents in the State of Nevada requiring them to give all local and joint waybills covering freight destined to points in the same State a separate series of numbers, commencing with the number one on the first day of each month.

Second—That in taking book and tissue copies of all such waybills all agents in the State of Nevada be required to have an extra tissue copy taken for the use of the Railroad Commission of Nevada.

Third—That instructions be issued to agents in Nevada requiring them to forward the Commission's copies of waybills directly to the Commission once during each week of the month for which such copies are required; namely, during the month of May, 1914, October, 1914, and regularly every March and October thereafter, unless the Commission designates a different period, in which case ample notice will be given.

Kindly acknowledge receipt of this circular immediately, advising us to the action taken by your company in this matter.

RAILROAD COMMISSION OF NEVADA,

By E. H. WALKER, *Secretary*.

Dated April 8, 1914.

TARIFF RULING NO. 6—AUTOMOBILE COMMON CARRIERS

PASSENGER FARE SCHEDULES

Section 1. *Title Page of Every Tariff Must Show:*

1. N. R. C. number in upper left hand corner, followed by N. R. C. numbers that are canceled thereby. (Note: A separate set of N. R. C. numbers for freight and passenger tariffs must be used.)
2. Name of issuing carrier.
3. Whether tariff is local, or joint, or both. (Names of participating carriers, if joint tariff.)
4. The territory or points from and to which the tariff applies, stated, together with the route traversed.
5. Date of issue. Date effective.
6. Name, title and address of official by whom tariff is issued.
7. If tariffs are issued on less than the statutory notice of thirty days by permission, or order, or authorization of the Railroad Commission, notation "Issued under special permission of the Railroad Commission of Nevada No.....of (date).....," or "Issued in compliance with order or authorization of the Railroad Commission of Nevada Case or Application No....." must appear on title page.
8. Temporary excursion tariffs must show date of expiration. "Expires.....unless sooner canceled, charge extended," such date of expiration to be the last date on which portion of tickets sold under the tariff is good for passage.

Section 2. *Passenger Tariffs Must Contain:*

1. The fares explicitly stated in cents or in dollars and together with the names of the places from and to which they are arranged in a systematic manner.
2. If desired carriers may use a distance table for basis of fares, incorporating in their tariffs an official list of all points in connection with which such basis is to apply and showing in proper order the distance between each point.
3. Full explanation of reference marks and technical abbreviations used in the tariff.
4. Rules and regulations which govern the tariff, in clear and concise terms, setting forth all privileges, stopovers, extension of time, refunds for unused and partly used tickets, baggage rules, baggage rates, etc.
5. All passenger tariffs must show location of stopping point and terminal municipality.

FREIGHT RATE SCHEDULES

Section 3. *Title Page of Every Tariff Must Show:*

1. N. R. C. number in upper left hand corner, followed by N. R. C. numbers that are canceled thereby. (Note: A separate set of N. R. C. numbers for freight and passenger tariffs must be used.)
2. Name of issuing carrier.
3. Whether tariff is local, or joint, or both. (Note: Names of participating carriers if joint tariff.)
4. The territory or points from and to which the tariff applies, briefly stated.
5. Date of issue. Date effective.
6. Name, title and address of official by whom tariff is issued.

7. If tariffs are issued on less than the statutory notice of thirty days by permission, or order, or authorization of the Railroad Commission, notation "Issued under special permission of the Railroad Commission of Nevada No.....of (date).....," or "Issued in compliance with order or authorization of the Railroad Commission of Nevada in Case or Application No.....," must appear on title page.

Section 4. *Freight Tariffs Must contain:*

1. Alphabetically arranged and complete index of all commodities upon which commodity rates are named. If all of the commodity rates to each destination in the tariff are arranged alphabetically by commodities further index of the same may be omitted.

2. Alphabetically arranged and complete index of points FROM which tariff applies and alphabetically arranged and complete index to points TO which tariff applies.

3. All rates must be explicitly stated in cents, or dollars and cents, per one hundred pounds or per ton of 2,000 pounds, together with the names of the places from and to which they apply, arranged in a simple and systematic manner.

4. If desired, carriers may use a distance table for basis of rates by incorporating in their tariffs an official list of all points in connection with which such basis is to apply, and showing in geographical order the distance between such points.

5. Full explanation of reference marks and technical abbreviations used in the tariff.

6. Rules and regulations which govern the tariff in clear and explicit terms setting forth all privileges and services covered by the rates, such as free storage and store-door receipt and delivery.

Section 5. *Time Schedules:*

1. All common carriers must file a full and complete time schedule showing time of arrival and departure at all points.

Section 6. *General Instructions Relating to Passenger and Freight Tariffs:*

1. Full 30 days' statutory notice is required on all tariffs except where special permission has been obtained, or on temporary excursion tariffs.

2. Temporary excursion tariffs may be established upon one day's notice to the public and mailing two (2) copies to the Railroad Commission.

3. Tariffs of lines now in operation may be issued and filed in the first instance on one day's notice.

4. Tariffs must be typewritten or issued by any of the various printing processes, provided all copies so issued are clear and legible.

5. Two (2) copies of all tariffs and classifications and three (3) copies of all time schedules and circulars must be filed with the Railroad Commission. Address "Railroad Commission of Nevada, Carson City, Nevada."

RAILROAD COMMISSION OF NEVADA,

Dated May 14, 1917.

By E. H. WALKER, *Secretary.*

STATE OF NEVADA

BIENNIAL REPORT

OF THE

**Public Service Commission
of Nevada**

1917-1918

J. F. SHAUGHNESSY - First Associate Commissioner
W. H. SIMMONS - Second Associate Commissioner
E. H. WALKER - - - - - Secretary
F. JO. BROILI - - - - - Chief Engineer



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : : JOE FARNSWORTH, SUPERINTENDENT

1918

BIENNIAL REPORT OF PUBLIC SERVICE COMMISSION

STATUS OF CASES REFERRED TO IN FORMER REPORTS WHICH WERE STILL PENDING BEFORE THE COMMISSION OR THE COURTS AT THE CLOSE OF OUR LAST REPORT.

Case No. 91—Alleged Unsatisfactory Water Service.

This case is dealt with on page 220 of our 1915-16 report. Upon request of complainant the proceeding was indefinitely postponed.

Case No. 101—Petition for Electric Service.

This case is referred to on page 222 of our 1915-16 report. Hearing was postponed from time to time at request of complainants, J. R. Melrose, et al., until electric service to the town of Hawthorne was furnished by the Nevada California Power Company, when the case was considered closed.

Case No. 103—Alleged Excessive Rates and Inadequate Water Service at Elko.

This case is referred to on page 223 of our 1915-16 report.

On March 21, 1917, petition for rehearing was filed by respondent, the Elko Water and Light Corporation, and on March 27, an order was issued granting the rehearing. Rehearing was held on May 9, 1917, and the following order entered October 10, 1917:

BEFORE THE PUBLIC SERVICE COMMISSION OF NEVADA	
TOWN OF ELKO, Et AL.,	Complainants,) CASE U-103) Respondent.
v.	
W. T. SMITH, OWNER OF THE ELKO WATER WORKS,	

Appearances:

MILTON B. BADT, Attorney for Complainants.
HENDERSON & CAINE, Attorneys for Respondent.

OPINION AND ORDER

BARTINE, *Chief Commissioner*:

STATEMENT OF CASE

Since this proceeding was instituted, it has been shown to the Commission that Mr. W. T. Smith, respondent above named, had succeeded to all the interests of the Elko Water and Light Corporation. Therefore, W. T. Smith has been substituted as respondent, and the final order in the case will be directed to said W. T. Smith, as owner of the Elko Water Works. This change of parties in no way changes the issues that are involved in the proceeding.

The case was primarily assigned to Commissioner Shaughnessy, who conducted two hearings at Elko, at which hearings both sides were represented and introduced testimony as fully as they desired. Later, a third hearing was held, this one in Carson City, all three of the Public Service Commissioners being present. The complainant had ample notice of the time and place of the third hearing, but failed to make any appearance or any showing whatever. After the order was made, a rehearing was held at Carson City before Commissioners Bartine and Simmons, Commissioner Shaughnessy being at the time in the East on Railroad Commission business. At this hearing, the Water Company alone appeared, the complainants again failing to make any appearance or any showing.

TESTIMONY UPON REHEARING

My views with respect to the changes that should be made in the order are based mainly upon the showing that was made upon the petition for rehearing. The attorney for the complainants in the town of Elko, by address to the Commission, which is in the nature of a brief, claims the testimony of Mr. T. J. Critchley, the Superintendent of the Water Company, offered upon the rehearing, presented nothing that was new, but rehearsed what was already before the Commission. With this view I possibly concur. The testimony given by the witness Critchley went immediately, directly and in detail to the effect which the order as made would have upon the revenues, both gross and net, of the respondent. It was simply possible that this matter could have previously been in the record, because there was no way by which the witness could have known what order the Commission was going to make. Until the order was actually made, there was no basis for such testimony as was introduced at the rehearing. The testimony offered by this witness was not only entirely new, but, in my judgment, the most direct, specific and forceful testimony given at any stage of the proceedings. Going, as it did, into details, it showed that the order originally made would have the effect of reducing the net revenue of the respondent company to \$4,815 per annum. Assuming, upon the basis of testimony previously introduced, that the net earnings for the next two years would average \$9,000 per annum, the testimony showed that the order would reduce these net earnings to a sum which would be less than 3 per cent on \$150,000 of valuation. If such testimony is uncontradicted, is not material and directly in point, then I must confess to a very vague conception of what the word "testimony" means.

This simple statement, upon its face, should be sufficient to show why the majority of the Commission has reached the conclusion that the order originally made should be modified. At the same time, I speak understandingly when I say that it is the desire of the majority of the Commission, and doubtless of the entire Commission, to give to the people of Elko the fullest measure of relief possible without doing injustice to the Water Company which is rendering the service.

THE ISSUES STATED

To the end that the case may be fully understood, a very brief statement of the points made by complainants may be instructive. It was alleged that the maximum allowance of water at minimum rates which, for a number of years, had been 12,000 gallons monthly, had been reduced, first to 10,000 gallons and then to 8,000 gallons; while the minimum charge remained as previously at \$2.50 per month. The claim was that this maximum allowance of 8,000 gallons per month was insufficient to meet the requirements of an ordinary household and should, therefore, be increased to 12,000 gallons. One witness expressed the opinion that the maximum allowance should be not less than 15,000 gallons per month. It was further complained that at certain seasons of the year the water was turbid; that the service rendered was inadequate, and that the water pressure in times of fire was insufficient.

The Commission found that the water supplied was at times more or less turbid. This is a condition which prevails in every community in the State of Nevada, the water service of which is supplied by a public utility. It is a condition which results from the storms which at times descend upon the country and make the water, to some extent, discolored and muddy, in spite of the reasonable and ordinary precautions that can be taken to prevent.

The Commission found, and properly, I think, that the water pressure for fire purposes was less than it should be. To improve this condition, the company was ordered to install a twelve-inch main from the reservoirs in the town, in lieu of the smaller mains which had been laid many years previously and when the town was very much smaller.

SOURCES OF WATER SUPPLY

It was shown that the Water Company had two entirely separate and distinct sources of supply. One was the river through the Osino dam and ditch. The water, it was conceded, was not suitable for domestic purposes, but was disposed of partly to the town of Elko for sprinkling the streets and partly to the Northern Pacific for special uses. For the purpose of this case, it seems to me that the water thus obtained from the river and disposed of as above indicated should very properly be left out of consideration. It is something apart from

service which has been and is being rendered to the inhabitants of the town for domestic uses. It has been suggested that, in order to increase the revenues of the company, and thus put it in position to furnish the denizens of the town with water at lower rates, the Southern Pacific and Western Pacific Companies might be required to pay higher rates for the water which they receive from the respondent. Upon this point it seems sufficient to say that it is only reasonable to suppose that the water company is securing the very best price that it can from these railroad companies. Both of these companies are strong financially, they are in a position to secure water for themselves if they think they are being overcharged, and having in mind sound business principles, it is hard to avoid the conclusion that they would procure their own supply rather than pay anything more than what they thought was just and reasonable. If we undertake to say that the rates paid by the railroad companies and by the city for the river water coming through the Osino ditch are less than they should be, we are indulging in blind conjecture. There is no possible way by which it can be determined how much more, if any, the railroad companies would pay for their water before proceeding to develop their own supply or what the town would be willing to pay. We must deal with these conditions as they are and upon business principles, so far as we are capable of comprehending them.

The second source of supply, and that with which the people of Elko are especially concerned, is certain tunnels and wells that have been driven and sunk for the purposes of developing pure mountain water. With respect to this water, the evidence is very clear that it is pure to the point of being better than the average that is furnished to towns of moderate size in this western country. The evidence also showed that there was an insufficiency of pressure for fire protection. To meet this deficiency, the order required the company to install a twelve-inch main from the reservoirs to the town. This work has been done by the respondent, and as far as now appears, the pressure for fire purposes in the town of Elko is fairly and reasonably sufficient. So the questions of the quality of the water and the pressure for fire service may be considered as out of the case.

SUPPLY OF WATER INSUFFICIENT

At this point, it may be well to call attention to the fact that the evidence tended to show that the supply of water at the command of the company was insufficient to meet the calls of the people to be served. Therefore, the original order required the company to take steps to increase the supply for strictly domestic purposes. This meant the boring of more tunnels or the sinking of more wells, or both. Personally, I very seriously question the authority of this Commission to order a water company supplying a community to go out and prospect for more water. The obligation of such a utility is to supply the community to the extent of its means. To order a water company to search for more water involves about the same principle as would an order requiring someone to go somewhere and find a gold mine. However, the company accepted the view of the Commission upon this point and has been endeavoring to increase its supply of water suitable for the domestic uses of the people of Elko. This the company would naturally do as a sound business proposition, regardless of any strictly legal question that may be involved. The desire of the management is, of course, to supply the community with water. It can have no desire to fall short in the rendering of this service, because the result would almost inevitably be the incoming of some competitor, which in its nature would very seriously divide the patronage of the community.

In another aspect of the situation, this feature of the original order is important. It was a distinct recognition of the fact that the company had not a full supply of water at its command, to meet the requirement that it should raise the maximum allowance at the minimum rate from 8,000 gallons per month to 12,000. Clearly, no water company can furnish more water than it has. It appears, though, that in compliance with the original order, the respondent has proceeded in good faith to increase its supply of water.

MAXIMUM ALLOWANCE SHOULD BE INCREASED

The evidence upon rehearing tends to show that the improvements along this line are of such character that the 8,000-gallon per month limit may fairly and justly be increased to 10,000 gallons, which is within 1,000 gallons of the maximum allowance at the minimum rate in the city of Carson. It will hardly be denied that the conditions under which Carson City is supplied with water are

quite different from those which prevail at Elko. It is doubtful if the Water Company has to go anywhere more than two and one-half miles to secure its water. This comes gushing freely from the base of the Sierrita Mountains and the supply is almost unlimited. It reaches the community to be served by gravity and this gravity, through the medium of an adequate sprinkling system, furnishes a splendid pressure for fire purposes, besides an ample supply for all strictly domestic uses. Clearly, under the circumstances and conditions, an initial minimum rate of \$1.75 per month, which at meter rates would allow the consumer an allowance of 11,000 gallons per month in Carson City, is better than an allowance of 10,000 gallons per month in the town of Elko at a minimum rate of \$2.50. It seems to me, under all the circumstances and conditions, and the change of conditions since the original order was made, that the independent company may fairly be required to raise the minimum from 8,000 gallons per month to 10,000. While I would not be willing to lay down a rule that the whole burden of preserving lawns should be thrown upon the Water Company, it does seem to be only just that such a company supplying a particular community and having a complete monopoly of the business, should assume the burden which is necessary to maintain the community in a reasonably up-to-date condition. I, therefore, recommend that the present minimum of 8,000 gallons per month be increased to 10,000. Whether this quantity will be increased hereafter will, of course, depend upon the conditions of future demand.

RATES THE MAIN QUESTION

In this case, however, the main question is one of rates, and the substance of the complaint is that the \$2.50 minimum is excessive. It was stoutly maintained by a number of witnesses that this minimum rate, coupled with the maximum allowance thereunder, had the effect of diminishing the quantity of water for the sprinkling of lawns, as a result of which some of the lawns were permitted to wither and die. I have already suggested that the burden of sustaining lawns cannot properly be thrown upon a water company. If a person desires a nice lawn, he must expect that lawn to cost him something. It is a matter in which there should be a just and fair balance between the Water Company and those who desire the water for the purpose of sustaining lawns and trees. It is the duty of a public service commission to approach such a question in a spirit of fairness to both sides.

MINIMUM CHARGE AND LAWNS

Referring now to the effect of the minimum charge upon the maintenance of the lawns, it seems proper for me to say that the evidence upon this point was altogether indefinite and very far from being satisfactory. The testimony on behalf of the complainants were all of the opinion that the minimum charge of 8,000 gallons per month was insufficient for an ordinary lawn. Quite generally it was agreed that 12,000 gallons would be about the proper quantity. Some witnesses thought that it should be 15,000 gallons. But there was not a single testimony which gave the faintest suggestion of what constituted "an ordinary lawn." Speaking of the sizes of the lawns, the witnesses testified that the lawns ranged all the way from 30 by 40 feet up to 100 feet square. A lawn 30 by 40 feet comprises 1,200 square feet; a lawn 100 by 100 feet comprises 10,000 square feet. It is self-evident that the quantity of water required for a lawn 30 by 40 feet must be a very different thing from that which is required for a lawn 100 by 100 feet. If 12,000 gallons is "about right" for a lawn 30 by 40 feet; or 40 by 50; or 50 by 60; obviously it must be very much less than is required for a lawn 100 feet square. In a case like this, the rule of averages, applied only one that can fairly be adopted, and it may be said that the evidence, taken as a whole, indicates that the average lawn in the town of Elko does not exceed 40 by 50 feet in dimensions. For such a lawn, it seems to me, in the knowledge I possess of the subject, 10,000 gallons per month, if carefully used, should be reasonably sufficient.

VALUE OF RESPONDENT'S PLANT

The question of the reasonableness of this company's rates cannot be determined without a consideration of the value of the property which the company owns and properly used, in the rendering of the service. An engineer testified on behalf of the respondent gave the value of the entire plant new at \$376,000 and the value in its depreciated condition at \$349,311. This included \$80,000 for

water right. If we deduct the estimated value of the water right, we have \$268,569 as the value of the plant, according to the testimony of the Water Company's appraisal engineer. I deduct the most of the value of the water right, as claimed, for the reason that nearly all of the water used is percolating, which, under the law as laid down by Judge Morrow in the Tonopah water case, is not subject to water-right claim, being part and parcel of the soil. This principle, I believe, has been quite generally approved by the authorities of the State of California, including its court of last resort. Personally, I have no doubt of the soundness of this view. The company, in fact, has not made a very strong claim to water-right value.

ESTIMATE OF OUR OWN ENGINEER

For the purpose of this case, I feel that but little weight need be attached to the testimony of the company's engineer, who was making the best case he could for his client. I rely upon the disinterested testimony given by our own engineer, Mr. W. K. Freudenberger, who, after careful calculation, reached the conclusion that the plant as a whole was then worth approximately \$137,000.

But the fact must not be lost sight of that the original order of the Commission directed certain improvements to be made, which, of course, added to the investment. The new twelve-inch main, for example, cost approximately \$18,000; while the well already sunk cost something like \$1,600 more. Making due allowance for the fact that these improvements are in the nature of replacements and must be considered in the light of depreciation principles, our engineer reached the conclusion that, in round numbers, the true value of the property is approximately \$150,000.

PROSPECTIVE INCREASE OF BUSINESS AND EXPENSES

In this case, it is about as certain as anything in human affairs can be that the expenses of this company must necessarily increase for some time to come. What the future has in store in the way of increase of business, is pure conjecture. The writer of this opinion has known the town of Elko intimately and well for more than forty years. When he first knew it, the population was 400 or 500. During this long period of time, it has increased to probably 2,200. There is nothing to indicate any particular boom or much larger increase hereafter than has taken place in the past. It we estimate that the town will increase in population 150 annually for the next five years, we shall be making an ample allowance. It is a prosperous town with many well-to-do people resident therein. It is the county-seat of the richest county in Nevada; but there is nothing to indicate any larger relative growth in the population of the town than has taken place in the years gone by. There was a marked and rather unusual increase following the advent of the Western Pacific Railroad, but, in the main, the force of that has been spent and we cannot reasonably look forward to any unusual increase of that kind. For the reasons set forth above, it seems fair to assume that for several years to come the expenses of this Water Company will increase at least as rapidly as its business will increase, and in fixing rates and water allowances in this proceeding the respondent should not be required to assume all of the risks and chances. We should make an order that will be reasonable under the conditions as they exist, having in mind changes which are certain to take place and which have been sufficiently referred to.

WHAT MIGHT HAVE BEEN SHOWN

In this proceeding, the complainants were represented by a very excellent attorney, Mr. Milton B. Badt. In a letter to this Commission, Mr. Badt suggests that certain testimony could have been offered, showing that the business of the Water Company will increase considerably in the future; but the cold fact is that it was not shown, and this Commission must proceed upon the testimony as it stands. There was nothing to prevent the presentation of such testimony by affidavit, even though affidavit testimony is *ex parte*. This Commission has uniformly accepted such testimony, subject only to the condition that the opposing side must be given fair and reasonable opportunity to meet it. It has been urged that the community cannot be "penalized" on account of improvements and betterments. With that, I am fully agreed; but the making of necessary improvements and betterments in order to meet the enlarged requirements of a growing community is a necessary expenditure, and those who make the expenditure are entitled, under normal conditions, to a fair and

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reasonable return upon the amount thus expended. In dealing with the meters, we should "penalize" nobody—neither the community nor the utility—are entitled to fair treatment.

BETTERMENTS IN AMPLE TIME

The improvements intended to give better pressure for fire purposes, larger supply of water for domestic use are such as would naturally be expected because they are necessary to meet the growing requirements of the town. The company is in no way reprehensible for not having made provision to meet these conditions at an earlier date. When the present owner acquired the property, he had he proceeded to make the enlargements required by the order of the commission, he would have been subject to the charge of having installed an oversized plant. At that time, Elko probably contained about one-third of its present population. There can be no doubt that the plant as it existed was sufficient to meet the necessities of the town. At all events, we have before us no complaints on that score.

DIFFICULTIES OF WATER SITUATION AT ELKO

In reaching a proper decision in this case, we should not overlook the difficulties under which the defendant company is operating. Practically the whole of its water supply that is used for domestic purposes is procured by the running of tunnels and the sinking of wells, both expensive operations. The evidence shows that in thus seeking to acquire more water to meet the needs of the town, a great deal of expensive work has been done in the past that has been wholly unproductive of substantial results. Some of the tunnels and wells have proved complete failures. When people seek for water by either of the methods which this company is compelled to pursue, there is much of uncertainty as to the outcome. One cannot always sink a well and secure a volume of water that would be appreciable as a part of a large water system, and the same may be said with regard to the running of tunnels. It is one thing to find water; but it is another thing to find it in sufficient quantity to be of real value in a water system which supplies a good-sized community. The evidence in this case indicates that the company has heretofore made earnest and consistent efforts to equip itself in such manner as fairly to meet the demands upon it. We have no reason to doubt that it will continue the same policy in the future. In fact, selfish considerations would induce the company to pursue such a course, because otherwise it might find itself subjected to a competition which it would naturally desire to avoid.

THE QUESTION OF METERING

Without passing upon the question of whether, under the law of this State, the Commission has authority to order a universal installation of meters, we feel safe in expressing the view that such action should not be taken until the necessity therefor is clearly shown for the purpose of preventing discrimination and abuses. In this case, no such showing has been made. On the contrary, the evidence given clearly indicates that during all of the past months, the meters, if installed, would be virtually useless, simply adding an additional expense upon the company. The general installation of meters would not prevent something in the way of discrimination as long as minimum charges are allowed. Some consumers would be certain to use less than the maximum allowance of water at the minimum rate, while others would use right up to its full measure; but in each case the minimum charge would be the same. Besides it must be remembered that the general installation of meters would cost the company something like \$6,000, which would have to be added to the investment and constitute just so much more valuation upon which a return might be demanded.

ESTIMATES OF WATER SUPPLY

I am not impressed by mere estimates of how much water either the wells or the tanks will produce. These are merely the opinions of the witnesses, and may be wide of the mark in point of accuracy, especially so in cases where it is conceded that the quantity varies greatly from time to time. The witness Critchley's estimate that 80,000 gallon additional would be required in the event of a 12,000-gallon maximum being allowed, is also in the nature of guess-work. But, as superintendent of the water works, he is in a position to know when the water actually runs short. Such a condition is obviously

almost anyone. It seems to me that very little, if anything, is proved by taking Mr. Critchley's estimate of the quantities of water at the command of the company and dividing such quantities by the number of services. In this case, the evidence shows beyond question that, while some consumers use less than the allowance, others use very much more. It is clear at a glance that this renders almost valueless any estimate of the water available based upon the division of the total number of gallons by the total number of independent services. An excessive use by some consumers will count for a great deal more in its effect upon the condition of supply than under-consumption by others, because, when we go above the maximum quantity, we immediately run into much larger figures. To illustrate: Suppose the maximum allowance to be 12,000 gallons and that some consumers with large lawns used three times that quantity. The evidence given as to the amount of water bills rendered and paid indicates that just this thing has been done. In such a case, 24,000 gallons of excess water has been consumed. On the other hand, suppose some consumer with a very small lawn or none at all uses less than 12,000 gallons—say 8,000. Here we have a saving to the company of 4,000 gallons—just one-sixth of the excess used by the large consumer. It is selfevident that a very few patrons of the company, using an excess quantity of water, would make a greater draught upon the supply than could be offset by a much larger number of savings by small consumers.

CLAIM THAT ORDER SHOULD BE TESTED

It has been urged quite strongly that the order as originally made in this case should be allowed to stand and the Water Company be required to give the rates a trial. I am aware of the fact that, in some cases, such a course has been pursued; but these were cases in which the difference between what might be termed a reasonable return and the return which would result from the rates prescribed was very small. The leading case is that of *Wilcox v. The Consolidated Gas Co.*, reported in 212 U. S., beginning at page 19. In that case, the court found that the rates as prescribed by law would produce about 5½ per cent net return upon the value of the property as found by the appraisal engineers. The court also found that 6 per cent would be a fair return, and it was held that there was so much room for a difference of opinion as to the actual value of the property employed in the service, that the court would not be justified in holding the rate confiscatory because of the small difference which was shown. The condition here, however, is quite different. Taking the property at the lowest value fairly to be ascribed to it—that given by our own engineer—and then taking the carefully tabulated reports of the effect of the order as made, it seems about as clear as anything of this kind can be that the company would be left with a return not exceeding 3 per cent per annum upon the value of the property. It scarcely needs argument to make it clear that 3 per cent is not a fair return upon property invested for public use in the State of Nevada. Every business man looks for more than that. I have already endeavored to show that there is nothing to indicate that during the next few years the increase of earnings will more than keep pace with the increase of expenses. If we should make an order leaving this company no more than 3 per cent return, require it to give the rates a trial, and it later appeared that the per cent of return had not increased; or if it had and the increase had not been sufficient to bring it up to a fair return, the company would simply have lost a large amount of money with no possible chance of ever recouping the loss. In a subsequent proceeding, the Commission could not allow the company to raise its rates in such manner as to offset the loss of profits during the time it was operating under the reduced and noncompensatory rates. All that could be done would be to make an order fixing rates that would yield a fair return at the time.

It was suggested, but not very strongly urged, at the hearing of this case, that the expenses of the company were topheavy. It appeared that Mr. W. T. Smith, the manager, and who was also the principal owner, had, for some three or four years past, been receiving a salary of \$1,500 per annum; while the secretary, who also acted as attorney, was paid at the rate of \$500 per annum, making \$2,000 annually upon these heads. I fail to see the force of the objection to these charges. If there is a business anywhere, representing an investment amounting to \$150,000, the general management of which does not equal in cost the sum of \$2,000 per annum, I do not know where that business is. One of the witnesses for the complainants, a former superintendent, and who was

thoroughly conversant with the business, testified that Mr. Smith gave the closest attention and allowed nothing to escape him. It seems to me that the charges upon these two heads are not only legitimate but moderate.

It may be proper to suggest, in passing, that the charge for hydrant in the town of Elko is very low, by comparison with such charges ge throughout the State. I do not feel like recommending an increase of charges, but it is a matter that may very properly be considered here when the charges prescribed by the order to follow have been given and it appears that they fall short of yielding an adequate return for the service rendered.

It is very clear to my mind that the order as made should be modified so that I think it can be done in a manner that will result in substantial benefits to the people of Elko and, at the same time, leave the respondent company a comfortable profit. I assume that the people of Elko desire nothing that is unfair. I also take it for granted that the respondent will be satisfied with a reasonable return.

I suggest the following schedule of rates to be applied, beginning November 1, 1917:

For Residence Consumers

Consumers with single tap and no other conveniences.....	\$1.00 per month
Consumers with four-room house without sewer connections.....	1.75 per month
Consumers with five-room house, or larger, without sewer connections.....	2.00 per month
Consumers with sewer connections.....	2.50 per month
Maximum allowance, 10,000 gallons per month for.....	2.50 per month
<i>Meter charge for use in excess of 10,000 gallons per month:</i>	
Next 40,000 gallons.....	20 cents per 1,000 gallons
Next 50,000 gallons.....	15 cents per 1,000 gallons
All in excess of 100,000 gallons.....	12½ cents per 1,000 gallons

Commercial rates to remain as they were at the commencement of this proceeding.

For Contractors

Brick work, per 1,000 bricks.....	
Concrete work, per cubic yard.....	
Concrete sidewalk, per square yard.....	
Plastering per square yard.....	
Stone work, per perch.....	

Some little complaint was made by business men, to the effect that they were using very small quantities of water in their business houses—storage tanks, etc. In these cases, it is proper to say that, in order to render the service at all, a water company must be prepared with a sufficient supply of water and the necessary appliances for distribution. It is not so much a question of how much water a commercial house uses as it is a question of the convenience and benefit to the house. If a patron needs a bucket of water and cannot get it, the inconvenience to him is just the same as if he needs a barrel and could not get it. In either event, the company must stand ready to serve, and in dealing with these small quantities of water it is practically impossible to make differentiations. Of course, when it comes to the water running into many thousands of gallons monthly for the sprinkling of lawns and the preservation of trees, shrubbery and the like, then the question of quantity becomes material.

The schedule above suggested will, in my judgment, come very near satisfying all the demands of those who appeared before the Commission and gave testimony on behalf of the complainants, while, at the same time, it will provide a leave the company a net revenue of about 7 per cent per annum, which is not unreasonable.

I am authorized to state that Commissioner Simmons is in full accord with the views embodied in this opinion. Commissioner Shaughnessy differs to some extent, but I am not advised as to the exact points of difference. The idea of the situation will, doubtless, be stated fully in a separate opinion.

An order should be entered in conformity with the foregoing opinion of the majority of the Commission.

SHAUGHNESSY, Commissioner, dissenting:

I fully agree that additional sources of revenue should be developed and provided for at this time, but in the absence of a fair test of the rates prescribed by the original order, I feel that such action should have been deferred without, at this same time, increasing the domestic and commercial rates prescribed by the amended order amount to a very substantial re-

compared with the old rates for domestic and commercial service; also reduced graduated monthly charges have been fixed for domestic service, but no reduction in the company's minimum charges for commercial service has been made. The maximum allowance of water under the minimum monthly charges has been placed at 10,000 gallons, which is to be compared with the company's allowance of 8,000 gallons, and with 12,000 gallons prescribed by the Commission's original order. Also the graduated scale of rates for the consumption in excess of 10,000 gallons has been substantially increased over those named in the original order.

In my opinion, the application of the Water Company, on rehearing, should have been denied in so far as it effected the rates and the maximum monthly allowance of water prescribed by the original order for domestic and small commercial consumers. The company should have been required to give the rates originally ordered a fair test, with the understanding that if they did not prove compensatory, the case would be reopened and reheard at Elko, and after giving all interested parties an opportunity to be heard, such determination made as the facts would fairly justify. This would not in any way prejudice the rights of the Water Company, because upon a fair test of the increased consumption promoted by lowering the rates in question, the evidence would be at hand as to what increase there had been in earnings, and what deficiency, if any, there remained to be made good, covering the test period and for the future.

Further, there would at such time be additional testimony and experience which would enable the Commission to equalize and spread the burden of a fair return over the business more accurately than can possibly be done at this time, proceeding, as the Commission necessarily must, in the light of the present record, somewhat in the dark.

Elko is a long-lived community and the Water Company has nothing to lose by submitting itself freely to the jurisdiction of this Commission for just and reasonable regulation, and in this connection it does not follow that it must be made absolutely secure upon the first order that is made in behalf of such regulation.

In the original order, the earning test was taken over an average of the preceding five-year period, which, on the properties devoted to the service at that time, showed a very substantial return. If, therefore, at the expiration of another five-year period, the Water Company can, by complying with one or more orders of this Commission, furnish increased service facilities to the public at just and reasonable rates, and in the end secure a fair return on its property, including additions and betterments required, it should certainly have no just cause for complaint.

Without a fair test over a representative period, it is impossible to ascertain the reasonable and profitable expansion of the service at just and fair rates, both to the utility and the public, which should ultimately be prescribed. This the Commission is obliged to require on the one hand, and on the other, its attainment is all the public and the utility may reasonably expect. Under the rules laid down by the United States Supreme Court and our State Courts, both the public and the utility are lawfully entitled to this character of regulation. Therefore, I say, the utility may, by cooperation with this Commission, and without precipitate action, feel sure that its rights will, in the end, be fairly protected.

At the rehearing of this case the purpose and effect of the company's testimony amounted merely to taking the business of the past, under the operation of the former high rates complained of, and which the testimony in the hearings preceding the original order showed had the effect of substantially reducing the volume of the company's business, and applying thereto the reduced rates prescribed by this Commission in its original order, for the purpose of showing the apparent loss which the company might suffer under the said Commission-made rates. In my opinion such a premise is altogether too indefinite and uncertain upon which to predicate a conclusion.

In reference to the Water Company's contention regarding the inadequacy of its domestic water supply during the short-water period in the summer months, let me state that the testimony shows that Kitttridge Canyon has a maximum capacity varying between 300,000 and 350,000 gallons per day of good, pure water, but said supply falls off to approximately 200,000 gallons per day during two or three months in summer. The total capacity of the pumping supply of water from wells is 100 gallons per minute, 6,000 gallons per hour,

or 144,000 gallons per day. Therefore, combining said minimum domestic supply of 200,000 gallons from Kittridge Canyon and 144,000 gallons from pumping wells, there is available a total minimum domestic supply of 344,000 gallons per day. If this amount is divided by 2,200, the population of Elko reported by the Water Company, we have an average of 156 gallons per person per day, or 4,680 gallons per month, and if the population is subdivided into families of five persons each there is available from the above sources 23,400 gallons of water for each family's monthly use during said summer period in summer.

This analysis of Elko's available domestic water supply during the months when the supply is at the minimum, is made for the purpose of showing that the water company's plea that the minimum of 12,000 gallons per month prescribed by the Commission's order is excessive and cannot be complied with without the installation of other wells. In fact it shows that if the supply is properly conserved by fully metering the domestic and commercial consumption instead of metering only 45 per cent of the consumption, as at present, the supply should be ample to furnish said monthly minimum of 12,000 gallons. At present, the excessive waste and discrimination creeps in under the present arrangement of furnishing the service in part on a metered basis and in part on a flat-rate basis, where, as to flat-rate consumers, there can be no determination of judgment as to the amount of water which is being used. In view of the necessity of conserving the water supply at Elko for domestic and fire-protection purposes, it seems to me that no more profitable action can be taken by the Water Company than by establishing a complete meter system for the measurement of all service at Elko during late spring, summer and early fall months. At the present time there is no protection against the flat-rate consumers leaving their taps open and draining the reservoirs, thus leaving absolutely no water in the reservoirs for fire protection. According to the statement of President Smith received from this Commission, this condition of affairs actually took place during the present summer. We all recall that the Carson Water Company experienced similar difficulties before the installation of its meter system, the reservoir empty at times, very low pressure practically all of the time, and often supply so low that water would not run from sink and bathtub for some of the houses. Since the installation of the meter system, however, this trouble has not only been eliminated by conservation of the water, but formerly went to waste, but the company has also been enabled to discontinue the purchase of water which it formerly required and paid for at the rate of \$1,000 per annum.

When the order was made the Elko Water Company was furnishing water to 452 customers through 535 taps or connections of which 247 were metered and 288 were upon a flat-rate basis. In support of what has been said above regarding the conservation of the water supply, President Smith testified at the hearing held on June 10, 1916, that in his judgment a house which is metered and a house upon a six-month test, show a saving of 50 per cent as compared with a house upon a flat-rate basis. The Commission is obligated to remove the discrimination which exists at the present time between the company's practice of carefully measuring the service to certain customers and permitting others to enjoy service on a flat-rate basis. Therefore, if the company is prepared to show that it has an unlimited water supply and is prepared to place all consumers upon a flat-rate basis, it seems to me that it cannot be heard to complain against that portion of the order requiring the elimination of discrimination by the adoption of a complete meter system.

The question of adequate pressure for fire protection was raised at the original hearings and in pursuance thereof an order was made requiring the installation of a larger main from the reservoirs to the city. This order was done, but the property of Elko will not be properly safeguarded unless a sufficient volume of water maintained in the reservoirs during the summer months, and this can be accomplished only by requiring the metering of the supply. What does an additional expenditure of \$60,000, the cost of installing said meters, amount to compared to a fire loss in Elko which might easily run up to \$50,000 or \$100,000, because the water had been used so extravagantly and the reservoirs were practically empty when the fire broke out? The original order requiring this necessary improvement should have been revoked.

When the necessity exists, as is here clearly obvious, there can, in my opinion, be no doubt of the justice and legality of an order requiring meters

purpose of removing discrimination, for safeguarding the public service, and for protecting the company's water supply.

In addition to the Kittridge Canyon supply the company has other water known as the Osino supply, which comes from the Humboldt River. This is used in part on a 400-acre ranch, and in part for flushing sewers and sprinkling streets at Elko; also in furnishing a flat-rate service to the Southern Pacific Company for its road engines, which is paid for at \$100 per month. A portion of the Osino property forms a part of the inventory value of the property devoted to the public service, and therefore may not be excluded from consideration, as suggested by the majority opinion.

Again, the company advises that it is furnishing service to the Western Pacific Company for engine, round-house and machine-shop service at Elko from its Kittridge Canyon supply because, as stated by the company, the Osino reservoirs are not located at a sufficient elevation to furnish the necessary gravity pressure at the Western Pacific Company's yards and shops. The Western Pacific Company's use is said to be about 2,000,000 gallons per month. This service is metered and charged for on a basis of $7\frac{1}{2}$ cents per thousand gallons, from which the Western Pacific's water bills averaged \$152 per month during the year 1916.

Regarding these charges made for service to the Southern Pacific and Western Pacific Companies at Elko, let me suggest that if the service furnished measures approximately the same in gallons in both instances, and I believe it will, there is no justification for a variance of \$52 per month in the charges. I believe the service is fairly worth \$150 a month to the Southern Pacific Company, and therefore the domestic and commercial consumers of the Water Company should not be required to carry this amount of deficiency of a fair return upon the property.

In view of the fact that Elko is a perpetual life community, and that it will continue to grow rapidly and thus make the company's investment secure, while at the same time growing into a more valuable property asset, I have felt, in the absence of satisfactory evidence to the contrary, that a \$2 monthly minimum would be a just and reasonable rate for the people of Elko to pay a maximum use of 12,000 gallons. Also, that we should fix a graduated schedule of rates which would insure the consumers during the late spring, summer and early fall months a supply of 20,000 gallons per month at a charge of \$3.10, or the same as for an equivalent service at Carson City and Winnemucca as fixed by this Commission. This would enable consumers to secure their domestic and lawn or garden service for approximately \$30 per year, which in my opinion is a substantial burden, and about all the average salaried and wage earning families should be called upon to bear. If additional revenue is necessary for the support of the Water Company, it should be developed from other sources.

For the maintenance of a fairly good lawn and trees, 20,000 gallons per month is shown to be a necessary economical use in Carson City, where the water is metered and not allowed to go to waste. At Winnemucca the gravity flow is reinforced by pumping from wells on the Humboldt River, the same as is now being done at Elko, and in this behalf it is admitted that additional wells can be put in at Elko and the domestic supply increased from that source—the only objection urged being that the company would be compelled to purchase additional ground. In this connection the Commission's power to require the utility to enlarge its facilities in the interest of an adequate public service, even though necessary to exercise the right of eminent domain, is seemingly made entirely clear by *M. P. R. R. Co. v. Kansas*, 216 U. S. 262, and *Wisconsin, etc., Ry. v. Jacobsen*, 179 U. S. 287.

The Elko consumer has heretofore, under the operation of the company's rates, been required to pay \$5.50 for the use of 20,000 gallons of water. The rates fixed in the original order would have enabled the consumers of Elko to secure an equivalent service for domestic and lawn use, for \$3.26 per month, whereas, under the amended order here under consideration, the monthly charge for said service will be \$4.50. Compared with these charges, such 20,000-gallon service is furnished to the consumers of Winnemucca for \$3.10 per month—made up by a maximum of 16,000 gallons furnished under a minimum monthly charge of \$2.50, and the balance at the rate of 15 cents per thousand gallons.

The graduated rates covering domestic service in excess of the maximum water allowance under minimum monthly charges established by the Elko Water Company; those ordered by the Commission originally; those prescribed

by the majority in this proceeding and those at present maintaining water companies of Winnemucca and Carson City, are shown comparatively in the table below:

Quantity in gallons	Elko under old rates— Cents per 1,000 gals.	Elko under rates of original order—Cts per 1,000 gallons	Elko under rates of present order—Cts per 1,000 gals.	Winnemucca water rates—Cents per 1,000 gals.
First 10,000.....	.25	.17	.20	.15
Next 20,000.....	.25	.15	.20	.15
Next 20,000.....	.25	.12½	.17½	.12
All over 50,000.....	.25	.10	.12½	.10
Minimum charge.....	\$2.50	\$2.00	\$1-2.50	\$1.50-2.50

The Winnemucca and Carson City rates were established in compliance with orders of this Commission. *Citizens of Winnemucca v. Winnemucca Company*, decided February 6, 1915; and *In re proposed changes in charges of the Carson Water Company*, decided May 17, 1917.

The expenditures occasioned by the laying of the new 12-inch main and those contemplated for the installation of meters for the removal of dirt and the conservation of an adequate supply of water for fire protection afford no good reason for increasing the rates over those originally ordered by the Commission. The object of laying the new main and the result accomplished has been to increase the pressure to a standard of 60 pounds and to secure an adequate supply of water for fire protection, instead of the former fire pressure ranging from 20 to 55 pounds, dependent upon the varying conditions of the main. A betterment in which the entire community has a vital interest, and the cost thereof should properly and lawfully be borne by public property and not by private. In an inquiry of this nature, if it appears that public property is enjoying the benefit of the increased protection afforded, and is not receiving therefor to the utility which is rendering the service, an order should be made by this Commission requiring it to do so.

In all well-organized communities within the State the municipal authorities or Town Boards, have, on behalf of the municipality or town, assumed the obligation of paying for and providing the necessary fire protection service. In behalf we may, by a comparison of the amounts paid by respective municipalities for fire protection, ascertain whether or not the Water Company is securing a fair compensation for said fire-protection service. Set forth below is a comparative statement of the water rentals paid by different municipalities in the State, including population, property assessment valuations and water rates:

Comparative Statement of Water Rentals Paid by Different Municipalities Including Population, Property Assessment Valuation, and City Taxes

Classification	Elko	Goldfield	Tonopah	Virginia City Gold Hill
<i>Year ending June 30, 1916</i>				
Fire hydrant rental.....	\$1,950	\$4,224	\$2,950	\$2,500
Street sprinkling.....	328	469	350	500
Municipal departments.....	460	816	875	1,700
Totals.....	\$2,738	\$5,509	\$4,175	\$4,250
Population.....	2,200	4,000	5,000	2,300
Assessment valuation of the property within each city for 1917.....	\$2,000,000	\$880,000	\$3,700,000	\$892,000
The city tax rate fixed by each city for the current year.....	\$0.50	\$2.04	\$1.46	\$1.40

Compared with Goldfield, Tonopah, Virginia City and Fallon it will be observed that the annual charges made by the Elko Water Company for fire protection under the heading of "fire hydrant rental" is unreasonably low for an important community such as Elko. Following the statement further it will be observed that the property assessment valuation (an important consideration) in Elko amounts to \$2,000,000 as compared with only \$880,000 in Goldfield and \$892,000 in Virginia City-Gold Hill, where it will be observed that \$4,224 and \$2,500 respectively are paid for fire protection service. Likewise, Fallon, with a property assessment valuation of \$1,387,000 pays to its water company, which, by the way, is municipally owned and operated, an annual rental of \$2,890, as compared to a rental of only \$1,950 paid by Elko to its Water Company. A glance at the city tax rates shown at the bottom of the table is also interesting. It will be noted that the city tax rates of Virginia City and Fallon for the current year are respectively, \$1.40 and \$1.35, compared with which the city rate at Elko is only 50 cents. If 10 cents were added to the Elko tax rate, making it 60 cents, and applied to the \$2,000,000 property valuation shown, it would raise \$2,000; and if 15 cents were added and the rate brought to 65 cents, or less than half the Virginia City rate, and thereafter applied to said property valuation, it would produce an increased revenue of \$3,000. Therefore, it will be seen that there is ample margin within which the municipality of Elko may increase its tax rate moderately and raise a sufficient sum to pay the Elko Water Company a fair annual rental for the greatly improved fire protection which, in line with this Commission's order, has now been provided by the installation of said new 12-inch main. The town of Elko has 65 fire hydrants which heretofore have been charged for at the rate of \$2.50 each, or a total of \$162.50 per month, or \$1,950 per annum. In my opinion the charges for the service are too low and should be increased by doubling the present rate and making the hydrant rental \$5 each per month for the future. In support of the reasonableness of a \$5 rate, let me state that the hydrant rental charged at Tonopah is \$7.50 per month and at Goldfield \$8 per month.

The increase in the revenues and the consumers of the Elko Water Company shows the very substantial growth which has taken place in the company's business from 1911 to 1916, inclusive. In 1911, with 378 consumers, the gross earnings were \$18,954, whereas for the year 1916, the number of consumers had increased to 452 and the gross earnings to \$27,728.

Comparing the Elko and the Winnemucca Water Companies the former, with 452 consumers, had gross earnings amounting to \$27,728 for the year ending December 31, 1916, while the Winnemucca company, with 471 consumers, had gross earnings amounting to \$18,425.

Manifestly the foregoing indicates that there should be ample leeway at Elko within which to grant the people an adequate service at substantially better rates than were formerly required when the business of the company was small.

The operating expenses of the Elko Water Company for the year ending December 31, 1916, amount to \$15,415, of which 52.40 per cent or \$8,076 was charged off under the head of "general expenses," comprising general officers salaries, office supplies and expenses and miscellaneous. Speaking comparatively the general expenses of the Carson Water Company for the same period were \$3,500, or 32 per cent of the operating expenses, and for the Winnemucca Water Company these expenses were \$964, or only 18 per cent of the operating expenses. These three companies compare favorably from an operating standpoint, therefore the conclusion cannot be escaped, that the general expenses of the Elko Water Company are top-heavy, and, treating the matter liberally, should not exceed \$4,000 per annum. If taken at \$4,000 instead of \$8,076, the net earnings for the year, after deducting operating expenses, taxes, depreciation at 2 per cent on a valuation of \$150,000, and \$4,815, the assumed reduction due to the low rates ordered, but based upon consumption during maintenance of high rates, will be \$7,059, or equivalent of 4.7 per cent on a valuation of \$150,000.

Summarizing: It is my opinion that this Commission should, in lieu of increasing the rates to the domestic and commercial consumers over those originally ordered, have made the following order:

Require the company to remove the discrimination and safeguard the water supply for fire protection—an extremely vital consideration both to the company and the public—by installing an adequate and complete meter system.

Require the company to meter the Southern Pacific consumption and charge

therefor the same rate per 1,000 gallons that is assessed against the Western Pacific Railway, with a minimum charge of \$150 per month.

Require the company to increase the city's hydrant rental to a just and reasonable basis, considering the value of this indispensable service, viz: \$5 per hydrant per month.

Require the company, under its charter obligation, to furnish an adequate public service, to dig such additional wells as may be necessary, and continue as the reasonable maximum allowance 12,000 gallons of water under the minimum monthly charges, and for consumption in excess of this amount continue the graduated rates prescribed by the Commission's original order of February 19, 1917.

Compliance with such an order would increase the revenues of the company \$2,550 per annum, which, when added to \$7,059 heretofore shown as net income, would give a total net amounting to \$9,609, or a return of 6 per cent of \$150,000. What the additional net income would be as a result of the increased consumption, due to the low rates prescribed by the original order, cannot, in the absence of a trial, be foretold, but that it would be substantial there can be no doubt.

In closing I wish to emphasize that, subject to the modifications herein proposed for the development of revenues from other sources, the rates originally ordered should have been given a fair trial; and that I am opposed to the view that the Water Company, having a monopoly of the business in the city of Elko, should not be required to increase its water supply by the construction of additional wells in order to furnish a reasonably adequate domestic and lawn service on the one hand, and on the other that it should not be required to furnish its service upon a completely metered basis for the purpose of removing discrimination and safeguarding the company's water supply for fire protection and other purposes.

The law of regulation covering all of these points is well settled, and therefore, in view of the foregoing reasons, I find myself unable to concur in the majority opinion and order.

J. F. SHAUGHNESSY, *First Associate Commissioner*.

ORDER

OFFICE OF THE PUBLIC SERVICE COMMISSION OF NEVADA.
CARSON CITY, NEVADA, October 10, 1917.

Present:

H. F. BARTINE, *Chief Commissioner*,
J. F. SHAUGHNESSY, *First Associate Commissioner*,
W. H. SIMMONS, *Second Associate Commissioner*,
E. E. STONE, *Assistant Secretary*.

Pursuant to the conclusions and findings in the foregoing opinion of the majority of the Commission, it is hereby

Ordered: First, that the order heretofore made in this case under date of February 19, 1917, be vacated and set aside.

Second, that the Elko Water Company shall establish and publish for the future, effective November 1, 1917, the following schedule of rates:

For Residence Consumers

Consumers with single tap and no other conveniences.....	\$1.00 per month
Consumers with four-room house without sewer connections.....	1.75 per month
Consumers with five-room house, or larger, without sewer connections.....	2.00 per month
Consumers with sewer connections.....	2.50 per month
Maximum allowance, 10,000 gallons per month for.....	2.50 per month

Meter charge for use in excess of 10,000 gallons per month:

Next 40,000 gallons.....	20 cents per 1,000 gallons
Next 50,000 gallons.....	15 cents per 1,000 gallons
All in excess of 100,000 gallons.....	12½ cents per 1,000 gallons

Commercial rates to remain the same as before the commencement of this proceeding.

For Contractors

Brick work, per 1,000 bricks.....	6 cents
Concrete work, per cubic yard.....	6 cents
Concrete sidewalk, per square yard.....	4 cents
Plastering per square yard.....	3 cent
Stone work, per perch.....	6 cents

PUBLIC SERVICE COMMISSION OF NEVADA.

By E. EUGENIA STONE, *Assistant Secretary*.

Case No. 122—Request for Water Service in Tonopah.

This case is referred to on page 226 of our 1915-16 report. Informal correspondence resulted in the promise of the Water Company of Tonopah to make the desired connections not later than May 1, 1917.

Case No. 123—Alleged Overcharge for Sewer Service.

This case is referred to on page 226 of our 1915-16 report. It was consolidated with Case No. 134 and will be considered under that head.

Case No. 125—Discontinuance of Electric-Power Service.

On December 1, 1916, the Commission received an informal complaint from the American Carrara Marble Company, alleging that the Nevada-California Power Company had discontinued all power service from the Rhyolite substation, leaving the complainant company unprovided with power necessary to carry on its work. Later advices were to the effect that all electric service had been discontinued by defendant to the towns of Beatty, Carrara, Rhyolite, and Pioneer on December 1, 1916. The Commission at once wired the company to refrain from suspending its service until an investigation could be made. On December 8, 1916, further complaint was made by Mr. J. A. Sanders, District Attorney of Nye County, on behalf of the citizens of Beatty. The Nevada-California Power Company declined to restore service, as directed by the Commission, and, in order to prevent further dismantling of the power lines, the Commission called upon the District Attorney of Nye County, Mr. J. A. Sanders, to secure an injunction against defendant. On December 14, 1916, a complaint was received from Mr. John Dolfs, of Beatty, relative to the discontinuance of electric service, which complaint was consolidated with this case. On December 15, 1916, formal citation was issued to the Nevada-California Power Company to appear and show cause for the discontinuance of service. On December 17, 1916, District Attorney J. A. Sanders reported that, as the dismantling of the power line had been completed, application for injunction to prevent this action would be useless. December 20, 1916, request for postponement was received from original complainant, the American Carrara Marble Company, and on December 26, 1916, all parties were notified of indefinite postponement pending the consideration of questions of jurisdiction and procedure.

Case No. 126—Water Rates in Goldfield.

On December 11, 1916, a complaint was received from Mrs. A. Twileger alleging that water and sewer rates to her rooming-house had been materially increased. Investigation developed the facts that the increases were in part due to clerical error and in part to change in the classification of the rooming-house from twenty-one rooms to twenty-three rooms, which it was found to contain. Correspondence directed to complainant on the matter remaining unanswered, the case was considered closed.

Case No. 127—Water Rates in Goldfield.

On December 19, 1916, complaint was made by Dr. George P. DeVine, of Goldfield, charging excessive water rates. Investigation developed the fact that the rates charged were in full accordance with the Commission's order and they were considered reasonable.

COMPLAINTS FILED DURING THE YEARS 1917-1918**Case No. 128—Water and Sewer Rates in Goldfield.**

On January 6, 1917, an informal complaint was filed by M. W. McGee alleging excessive water and sewer rates in Goldfield. Investigation developed the fact that the rates were in accordance with those ordered into effect by the Commission, and were hence considered reasonable.

Case No. 129—Petition to Increase Water Rates.

On January 11, 1917, a petition was received from the Carson Company requesting permission to file certain increased rates for water in Carson City. The Company was informed that no appeal of increased rates could be given without formal hearing, but that the legal right to file such rates on thirty days' notice, subject to appeal, complaint and suspension. Later action on this matter is covered under Investigation and Suspension Docket No. 2.

Case No. 130—Water Service in Reno and Sparks.

Complaint was received on January 23, 1917, from Mr. Sardis Summerfield, of Reno, against the Reno Power, Light and Water Company, and on January 24, from the City Council of Sparks, against the same company, alleging that during the cold weather of the current season the water supply had been shut off in the cities of Reno and Sparks from a large number of the company's patrons, and requesting investigation. The Commission sent its Chief Engineer to Reno and Sparks to make a complete investigation and report. Upon receipt of this report, formal citation was issued to the respondent company on January 29, 1917, and hearing held at Reno, February 2, 1917. On June 22, 1917, the following opinion and order were entered:

BEFORE THE PUBLIC SERVICE COMMISSION OF NEVADA

IN THE MATTER OF THE INVESTIGATION OF THE WATER SERVICE
OF THE RENO POWER, LIGHT AND WATER COMPANY,
WITHIN THE CITIES OF RENO AND SPARKS, NEVADA.

No. U-130

OPINION AND ORDER

BARTINE: Chief Commissioner:

A number of complaints, more or less informal, having reached the Commission respecting the water service in the cities of Reno and Sparks during the months of January and February, 1917, the Commission decided to investigate the whole situation upon its own motion. The matter finally came before the Commission at a hearing at the City of Reno, Nevada, on the 20th day of February, 1917.

Hon. F. J. Byington, Mayor; Mr. Lester Summerfield, City Attorney; Mr. Harry Chism, City Engineer, appeared on behalf of the municipality of Reno. Mr. Sardis Summerfield, who had been one of the complainants, also appeared, but rather in the capacity of a witness. The defendant company was represented by Mr. George A. Campbell, its Manager, and Mr. H. A. Lemmon.

The substance of the various complaints was that during the cold weather of the winter of 1916-1917, some of the company's mains, and many of the service pipes within the cities of Reno and Sparks, froze and burst, as a result that some of the streets were flooded and many of the patrons of the company were deprived of their customary service. Such a condition of affairs works very great inconvenience and leads to much dissatisfaction on the part of those who have been patrons of the utility, and who look to it for a continuance of regular and reasonable service.

In dealing with such a situation it seems proper to remark that it is

to the interests of the company, as well as its duty, to prevent by all reasonable means within its power, the freezing of the pipes and the interruption of the service, thus avoiding the expense which is necessarily thrown upon the company by the work of making the needed repairs and restoring normal service. While the Commission has no definite figures at hand it is, nevertheless, quite clear that the thawing of the frozen mains and service pipes, and restoring the system to a fairly good working condition, must have cost the Water Company a very considerable sum of money. It is not to be supposed that any utility will deliberately and needlessly incur such a bill of expense, although, of course, as long as mankind remains imperfect, mistakes are quite likely to occur, which must, of necessity, lead to such results.

It is, moreover, the duty of the utility to guard against such occurrences because of the great inconvenience to which its patrons are thereby subjected, the unsanitary conditions created, and the danger to the community which must necessarily result from an inadequate supply of water for the purpose of fire protection.

The evidence made it clear, and it is in conformity with the personal knowledge of the members of the Commission, that the past winter was marked by cold weather of unusually long duration.

It scarce needs the saying that the longer continued the cold weather is at the same average degree, the deeper the ground will freeze and the greater will be the trouble from frozen mains and service pipes. It appears that there had been more or less trouble of the kind in previous winters but it was universally conceded that the troubles of the winter of 1916-17 were of quite unusual character, and that never before had either the mains or the service pipes been frozen to any such extent.

Naturally enough the city authorities of Reno were deeply concerned in the matter, and were active in their efforts to secure speedy relief. At a regular session held a night or two previous to the hearing, the City Council formulated a number of recommendations, changes and improvements which it was deemed proper for the Water Company to make. As these recommendations seemed to nearly cover the entire situation, and, as in the main the Water Company accepted them and agreed to make the changes and improvements urged by the City Council, it may be well to take them *seriatim*, and consider each one briefly, to the end that a suitable order may be made.

It was urged that the Water Company install another pump unit of at least five second-foot capacity, and both pumps to be connected to a new twenty-inch main running direct from the pumping station to the head of the sterilizing plant at the reservoir on the hill. Said main not to have any service connections, but the company to be allowed to have three valves connected with the city mains, to be used only in case of emergency when not pumping.

This proposition seemed to the Commission to be entirely reasonable, and was accepted by the company as such, the Commission being given to understand that the company would proceed at an early date to install the additional pump and new twenty-inch main.

All the mains in the cities of Reno and Sparks to be at least three feet under ground.

This recommendation was also accepted by the company, with the qualification that the requirement to lay the mains the full depth of three feet should only apply to new work. The company's qualification appears to be reasonable. Evidence showed that the mains and service pipes generally were only from a few inches to two feet below the surface. The work of sinking all of them at once to a uniform depth of three feet would manifestly be very burdensome to the company, and it would be too much to require. It would also be a great inconvenience to the public because it would make necessary the tearing up of the streets on a large scale all at once, and in many cases where the conditions did not immediately call for it. Whenever repairs are to be made upon a considerable scale, the mains and service pipes at the point where the repairs are made, may easily be lowered to the full depth of three feet, and in view of recent experiences, it seems only just and proper that the company should so lower them. According to the evidence, the greatest depth at which any pipes, large or small, were found frozen, was thirty inches. It is at these points that most of the immediate repairs are likely to be made, and it seems only reasonable to assume that the mains and service pipes which were not frozen during the past winter are not likely to be in the near future. At the same time, it is the part of wisdom and sound business policy to guard against such conditions

in every reasonable way, and therefore the company should be required to lower its pipes to the full depth of three feet, whenever it is necessary to dig down to them for the purpose of making repairs of considerable extent.

Heretofore service pipes from the supply mains in the streets, to and including connections with the buildings served, have been maintained at the expense of the patrons. The Commission believes that the maintenance of these pipes from the supply mains to the patron's property lines, should be taken over by the Water Company and uniformly lowered to the standard depth of three feet, wherever and whenever new mains are laid, or old mains are repaired and lowered. In maintaining an efficient and uniform standard of service, in meeting necessary municipal regulations arising from time to time, and to provide for the least disturbance to traffic because of the Water Company's occupancy of the city streets, all work of excavation and repair, or renewals of pipe, can be most effectively done by the Water Company's assuming complete jurisdiction as rapidly as improvements and repairs are carried forward on the distribution system at Reno and Sparks.

The evidence also showed that in many cases where the mains had been laid at a uniform depth of about thirty inches, the subsequent grading of the streets had lowered the surface to such extent that the pipes were covered by no more than a few inches of earth. It was asked by the City Council, and agreed to by the company, that when the streets were so graded, the mains should be sunk correspondingly, thus insuring adequate covering and protection from the cold. With this proposition the Commission fully agreed, and in a concrete case, should certainly order it to be done. As rapidly as it may be feasible, all mains and service pipes within the cities of Reno and Sparks should be laid at a depth of not less than three feet.

The City Council further recommended that there should be no mains smaller than four inches, and that no four-inch mains should be run for more than two blocks. To this the company entered a mild demurrer. It was conceded that, speaking generally, mains should be not less than four inches, but it was urged that in some cases it would be unnecessary to run a four-inch main two full blocks, for the reason that there might be only one or two houses to be served. The city authorities accepted this suggestion as a reasonable qualification. As a result, the conclusion seemed to be that wherever necessary and practicable to run a four-inch main, nothing smaller than that should be used. This seems also to be a reasonable proposition. Where the business is such as to require a four-inch main it is clearly to the best interest of the Company to lay one of that size, and in order to secure good service the company should be required so to do.

It was recommended by the City Council that no main on which a fire hydrant is now connected, or planned to be connected, should be smaller than six inches. The company conceded that this requirement was reasonable, and it undoubtedly is.

The City Council recommended that there should be no dead ends except where they were unavoidable. To this also the Water Company agreed, and the Commission should require that the system as a whole should be adjusted accordingly.

The City Council recommended that a new ten-inch main be constructed from Moran and Wheeler Streets west along Moran Street to South Virginia; thence on South Virginia to connect with a twelve-inch main on California Avenue. This recommendation was accepted by the company, and the Commission should require that the new main be laid accordingly.

Another recommendation by the City Council was that the water mains extending across the river at Vine street, and also at the Park street bridge, or any other exposed pipes that may be constructed in the future, should be adequately protected from the cold. To this the Water Company made no objection, and it is hard to see why any objection should be made. It is clearly to the interest of the company to protect from the cold its mains where they cross the river, or in any other exposed places. Such pipes should be protected in the best possible way for the good of all concerned—for the Water Company and the patrons as well.

The next recommendation of the City Council was that plans should be formulated to keep dirt from the mains. Every one can see at a glance that this is a perfectly reasonable requirement. No one should appreciate it more thoroughly than the Water Company itself. It seemed to be the thought of those taking part in the proceeding that the installation of the additional

pump would, in the main, remedy the condition which called for this recommendation by the City Council. Some of the witnesses testified that at times the water was turbid. This appeared to be largely due to the fact that during the time the supply ditch to the reservoir was frozen up, water from the river was pumped directly into the distributing mains. The new pump, though, is to be so installed that the water will be pumped into and through the new twenty-inch main above the sterilizing and clarifying plants, and therefore subject to treatment before finding its way into the distributing system. This should eliminate the turbid condition which existed last winter and insure a good healthful supply of water at all times. With such light as the testimony affords, no better way appears of remedying this evil than the installation of the additional pump and twenty-inch main as proposed in the City Council's first recommendation.

The next recommendation was that proper flushing or clean-out valves should be installed throughout the entire system. Upon this point the evidence was not very specific. The representatives of the Water Company conceded that there should be proper flushing or clean-out valves wherever feasible, but claimed that this requirement was already being met. There seems to be nothing to do upon this point, except to leave the matter in abeyance, subject to specific complaint. It may be, and it is hoped that it will be, that the other improvements made will remedy any just cause for complaint upon this head.

The next recommendation is that shut-off valves should be placed at least one every block. The purpose of this is to prevent the undue extension of any inconvenience resulting from the making of repairs. On behalf of the Water Company it was answered that this requirement is practically being met at the present time; not that there is a shut-off valve on every block, but that the Company aims to have one wherever it seems to be necessary. This matter, like that of the flushing or clean-out valves, may very properly be left for further consideration, with the expression of the view that the Water Company should use its best efforts to obviate any evil or inconvenience which may arise in the manner indicated when repairs are being made.

The final recommendation of the City Council was that the reservoirs should be enclosed by suitable fences, for the purpose of preventing animals of any kind from falling in and contaminating the water; to guard against pollution in any way and to prevent persons from tampering with the valves. To this the company answered that there had never been any pollution of the water that could have been guarded against by the erection of a fence, and furthermore that the erection of a fence would not prevent persons from tampering with the valves, for the reason that the valves were outside of where the fences would naturally be placed. The company expressed a willingness to leave this matter to the Commission. It may be added in this connection that the representative of the company stated that, while there were no fences around the reservoirs, there were, nevertheless, barriers in the form of rather large embankments which would prevent horses and cattle from getting into the reservoir, although it was conceded that sheep or goats might do so. It would be well to construct fences around the reservoirs sufficiently high and tight to prevent the passage of small animals such as sheep, goats, or hogs that might get into the reservoirs. The expense of such a fence cannot be great, and it ought to be done.

Honorable Roy Barrows, City Councilman of the Sixth Ward of Reno, presented a statement in which he made certain recommendations in addition to those which were made by the Council as a body:

First—That the Highland Ditch, which is the supply ditch from the Truckee River to the reservoirs, be covered, or that in lieu thereof, pipe be installed.

Second—That for the purpose of proper flushing at least once a year, that the company's reservoirs be concreted.

Third—That for the purpose of overcoming the turbidity, which sometimes exists, an additional reservoir to be used for settling purpose, be constructed on Hunter Creek, which serves the portion of the city south of the river.

These recommendations by Mr. Burrows indicate careful thought and intelligence. If they stood entirely by themselves, it might well be that the Commission would be justified in making an order in conformity with the views thus expressed. It seems, though, that the other improvements proposed by the City Council, and accepted by the Water Company, will reasonably meet the requirements of the situation and the Commission would not be justified, on the showing made, in ordering the things done proposed by this witness.

The purpose of covering the ditch or substituting pipe line is to prevent diminution of the supply from freezing in extremely cold weather. The additional pump and twenty-inch main provided for are intended for this purpose and these improvements will probably suffice to meet the situation.

If no water be pumped from the Truckee River into the distributing below the reservoirs, but all is pumped into the main above the sterilizing and coagulating plants it seems as though nothing but water of the best quality will be served to the people of Reno and Sparks. At all events, it is sufficiently clear how the concreting of the reservoirs would lead to an improvement in this behalf to justify the Commission in making an order which would put the company to the expense of such work.

It may be conceded that there is always room for improvement in any water system of any utility which is supplying the needs of a large community. It is practically impossible for any Commission to look forward to the future and prescribe in advance all the improvements which will be necessary to meet the wants of a growing city, and the changes of conditions which may take place. It seems, though, that the improvements herein proposed, provided for by the order of the Commission, will furnish the people of Reno and Sparks with a supply of water equal both in quality and quantity to that furnished to almost any other community of equal size in the country. In order to be made which substantially meets the demands of the community as a whole, it seems to be about as much as the Commission should do at this time.

It is only just to emphasize the fact that the water troubles of the winter grew out of conditions that were altogether abnormal. It might well come to pass that a similar state of affairs would not recur in many years. At the same time, it is part of a sound utility policy to guard, as far as possible, against a recurrence at any time, and the demand on behalf of the community served, and those who represent them in an official way, that all reasonable precautions shall be taken as a safeguard for the future, should require the fullest consideration. In so far as the various recommendations by the Board of Public Utilities Council can be carried out in definite and concrete form, it is right that the Water Company should act upon them and make the necessary changes. Reno and Sparks are both prosperous and growing communities. Their future is entirely assured, and the Water Company is certain of a good business for an indefinite period of time. Therefore it can well afford to make the changes suggested, in accordance with the views expressed in this opinion. It is fair to the Water Company to say that it has met the various complaints with a good spirit, and has shown a disposition to carry out the various recommendations as far as it may be practicable to do so.

An order should be entered in conformity with the views herein expressed.

ORDER

OFFICE OF THE PUBLIC SERVICE COMMISSION OF NEVADA
CARSON CITY, NEVADA, June 22, 1917.

IN REGULAR SESSION.

Present: Chief Commissioner BARTINE, First Associate Commissioner SIMMONS, Second Associate Commissioner NESSY, and Secretary V. Pursuant to the foregoing opinion, it is hereby ORDERED:

First—That the Reno Power, Light and Water Company, respondent in the above proceeding, be and hereby is required to install an additional pump under the existing main, at least five second-foot capacity, which pump, together with the one already in place, shall be connected to a new 20-inch main running direct from the existing station to the head of the sterilizing plant at the reservoir on the north side of the city, which said new 20-inch main shall be laid for the purpose of complying with these provisions. Said main shall not have any service connections, and the company shall be allowed to have three valves to connect with the city mains, to be used only in cases of emergency when not pumping.

Second—When new mains are laid or when repairs are being made on the old ones now in place, in any part of the system, such mains shall be laid to the full depth of three feet, wherever it is practicable to do so.

Third—All service pipes, wherever they may be now or hereafter, existing from the mains to the property lines, shall be taken over and cared for by the respondent company, and, as changes are made, laid to the full depth of three feet to correspond with the mains.

Fourth—Whenever and wherever streets are graded down so as to

the surface-covering over the mains and service pipes, such mains and service pipes shall be lowered accordingly and to a depth of three feet in order that they may remain adequately protected from the cold.

Fifth—Whenever necessary and practicable nothing less than four-inch mains shall be laid by respondent company, in any part of the system.

Sixth—No main with fire hydrant attached, or upon which it is planned to place such hydrant, shall be less than six inches in diameter.

Seventh—The respondent company shall so lay its mains and pipes that there shall be no dead ends whenever and wherever it is practicable to avoid them.

Eighth—A new ten-inch main shall be laid from Moran and Wheeler Streets to South Virginia Street, in the city of Reno, thence on South Virginia Street to connect with the twelve-inch main on California Avenue in that city.

Ninth—The mains across the river at Vine Street, in Reno, at Park Street bridge, and all other exposed places, shall be adequately protected from the cold.

Tenth—The respondent company shall use its best efforts in the formulation of plans and devices to keep dirt from all of its mains and service pipes.

Eleventh—Shut-off valves shall be put in wherever necessary to prevent an undue extension of inconvenience when repairs are being made to the mains and service pipes.

Twelfth—The respondent company shall proceed with all due diligence to build fences around its reservoirs, sufficiently high and tight to prevent small animals, such as sheep, goats and hogs from getting into the reservoir.

The respondent company is expected and required to carry out all the various provisions of this order as expeditiously as the same can reasonably be done. The Commission reserves to itself the right to prescribe and fix a definite time within which any particular provision of this order shall be fully complied with.

Each subdivision of this order, and every substantive part of each subdivision, is to be considered separately from all others, it being hereby definitely affirmed that there is no independence whatever between them.

PUBLIC SERVICE COMMISSION OF NEVADA.

June 22, 1917.

By E. H. WALKER, *Secretary*.

Case No. 131—Alleged Discrimination in Water Service.

On February 4, 1918, a complaint was received from Mr. C. C. Boak, of Tonopah, charging negligence and discrimination on the part of the water company in failing to thaw water pipes in the section of Tonopah south of Bryan Avenue and a few blocks southwest of Main Street. The Commission at once directed the water company, by wire, to make every effort to relieve the conditions complained of and was later notified by both parties that everything necessary was being done by the water company to remedy the difficulty.

Case No. 132—Petition to Discontinue Water Service at Ruby Hill.

On February 9, 1917, an informal petition was received from Mr. Fred Bartine, of Eureka, owner of the Ruby Hill Water Works, asking permission to discontinue water service to the latter place. April 24, 1917, was set for the investigation and hearing of this matter, and notices were posted in Ruby Hill advising the public of that fact. Later, petitioner was authorized to file deposition in lieu of giving oral testimony at Carson City, and the time extended for this purpose to May 1, 1917. On April 24, a telegram of protest against the proposed discontinuance of service was received from Mr. I. H. Rogers, clerk of the Richmond Eureka Mines Company. April 29, 1917, deposition was submitted by petitioner. On May 1, 1917, deposition of protestant was filed. June 18, 1917, application of petitioner was denied.

Case No. 133—Petition of Indian Springs Water Company to Sell Plant.

Informal application was received from the Indian Springs Water Company on February 17, 1917, for permission to discontinue public

water service at that point. On March 26, 1917, notice of intention was issued and posted at Rhyolite. Hearing was set for April 1, 1917, and petitioner was informed that deposition would be taken in lieu of personal appearance. On April 14, 1917, the Indian water company wired the Commission that capital stock of the company had been purchased by the Sunset Mining and Development Company and that the service to consumers would not be affected by the transfer. Proceedings were therefore postponed indefinitely.

Case No. 134—Alleged Excessive Sewer Rates.

Under this number Cases Nos. 72, 117, and 123 were consolidated being the complaints of Mrs. Mary Harrington, the Tonopah Hospital Association, and the Richard Mercantile Company against the Tonopah Sewer and Drainage Company on matters of rates and service for the city of Tonopah. Citation was issued February 1, 1917, and on March 24, 1917, hearing was held. To date of issue of this report no formal order has been entered.

Case No. 135—Gas Rates and Service in Carson City.

On March 3, 1917, the Assembly of the State Legislature, in session, passed a resolution directing the Commission to make investigation of rates and service of the Carson City Coal Gas Company. On March 27, 1917, citation was issued, and on May 21, 1917, formal hearing was had. December 1, 1917, the case was formally dismissed as the evidence did not appear to warrant any further action.

Case No. 136—Petition of the Nevada Gas Company Covering Changes in Rates for Gas Service.

On March 4, 1917, the Nevada Gas Company applied for permission to make certain amendments in its schedules covering charges and readiness to serve. The company was advised that the Commission could not approve the amendment without formal hearing, but that the changes might be incorporated into amended schedules after notice on the legal thirty-day notice, subject to complaint. This was done and the case closed.

Case No. 137—Gas Rates and Service in Reno.

On March 3, 1917, the State Assembly directed this Commission to make a resolution, to investigate the matter of gas rates and service in the cities of Reno and Sparks. Citation to the Reno Power, Light and Water Company was issued March 27, 1917, and hearing held April 1, 1917. On December 11, 1917, respondent company petitioned for privilege of submitting further testimony. The petition was granted and further hearing held July 6, 1918.

The following order was issued August 16, 1918:

BEFORE THE PUBLIC SERVICE COMMISSION OF NEVADA
IN THE MATTER OF THE INVESTIGATION OF THE SERVICE AND
CHARGES OF THE RENO POWER, LIGHT AND WATER COM-
PANY FOR GAS SERVED THE CITIZENS OF RENO AND SPARKS,
NEVADA. } No. U

OPINION AND ORDER

SIMMONS: *Commissioner*:

This case was called to the attention of the Commission by a resolution introduced in the Assembly by Assemblyman Golden at the last session.

Legislature, and came to hearing before the Commission May 21, 1917. At this hearing, the complainant, who was notified of date of hearing, did not appear to prosecute the case, which went off largely upon testimony and showing made by respondent company and the Commission's own interrogation of witnesses. A copy of the proceedings in this hearing was mailed to complainant, and so far no reply brief or rebuttal has ever been received by the Commission.

As the case stands, no evidence being introduced to substantiate the charges made in the Assembly resolution, it devolves upon the Commission to make investigation upon its own initiative, and determine whether the charges made in the complaint are well founded, and what adjustment in service and rates, if any, should be made.

Under date of December 10, 1917, and before the Commission could consider this case and make its findings, the defendant company asked permission to again appear before the Commission and present additional data bearing upon the case, which was granted. Owing to the absence of Commissioners Bartine and Shaughnessy this latter hearing was deferred, and was finally heard on July 6, 1918, Mr. H. P. Gillette and Mr. Wentworth appearing for the company.

As the gas plant serving these two towns is situated in the eastern part of Reno, about equidistant from each, both being served from the same generating plant, the two cases of Reno and Sparks may be considered as one. With reference to that part of the complaint claiming that the gas served to Reno and Sparks is inferior, and not of standard quality, we have no evidence to show that this is true. The only evidence we have on that point is the testimony of the respondents who claim that the gas served is fully up to the standard served by companies operating in other sections of the country, and the standard set by our Commission. The respondent's testimony further shows that the plant is modern and up to date, for a plant of this size, and fully 80 to 90 per cent efficient, and that there would be no object or economy to the company to manufacture poor or thin gas. In view of the fact that the City Electrician of Reno was authorized by our Commission to act as assistant to and in conjunction with our Engineer in checking up and reporting on complaints on electric and gas service in Reno, and no complaints have come from him or any other source, it would seem to indicate that this part of the complaint was not well founded, and might properly be dismissed.

We now come to the chief complaint, that of the rates charged for the service.

The Commission's function is not so much the regulation of the revenues of public service corporations, but to prevent abuses and discrimination, and to secure adequate and satisfactory service, at fair and reasonable rates for same. If the service is efficient and the charges for same reasonable, based upon all the conditions surrounding the rendering of the service, the question of whether the company rendering the service is making a little greater or less percentage of return upon the investment than might be considered standard in law, is not of concern to the Commission and is not properly a matter for regulation by itself. If, however, an excessive return is secured on account of inadequate service or unreasonable rate charges, then the question of return would be a matter for our consideration and adjustment.

It might be well to note in passing that, while all other lines of business not subject to the regulation during the last three years have taken full advantage of advances in value of all commodities dealt in, increasing enormously their profits—labor sharing in these increases—the public service corporations have not advanced their rates, notwithstanding the fact that everything that enters into the cost of operation has materially increased.

The company places a valuation of \$223,000 upon that part of its property employed in the gas service of Reno and Sparks, based upon appraisal made by Mr. Gillette in 1912, and claims since that time additions have been made approximating \$19,000. This valuation includes development cost which, in my opinion, should be eliminated as the business for some years past has been fairly remunerative and has shown some growth and increase in 1916 and 1917.

Upon the findings of the Commission's Engineer of \$185,000 as the value of that part of the company's property devoted to the gas, the net earnings of the company from gas for 1916 would be approximately 10 per cent upon the above

valuation of \$185,000, as shown by the following table of earnings and operating expenses for 1916, as taken from reports for that year:

<i>Earnings</i>	
Commercial earnings.....	\$65,70
Discounts and adjustments.....	5,17
Total earnings.....	\$60,53
Miscellaneous earnings.....	
Total operating revenue.....	\$60,53
<i>Operating Expenses</i>	
Production	\$15,45
Distribution	5,90
Commercial	4,80
General	4,50
Undistributed	60
Taxes (12% of R. P. L. & W. total).....	\$81,44
Depreciation (4% of \$185,000).....	7,40
Operating revenue.....	\$41,80
Net operating revenue.....	\$18,60

This company, fortunately for themselves and the consumers of gas, for a number of years past a favorable contract for oil for manufacturing purposes. This contract, however, expires in September of this year, at that date they will be compelled to buy oil on the open market at ver- rially higher prices than their present contract price. The present price is \$2.53 per barrel, delivered in Reno, as against the old or contract price of \$1.14½, or an advance of approximately \$1.39 per barrel. During the first six months of 1917, from statements furnished the Commission, upon request the company used 7,336 barrels of 42 gallons each of oil and sold 26,558,000 cubic feet of gas. Considering the increased cost of oil at \$1.39 per barrel, the company will have to be paid upon the expiration of the contract in September to increase the cost of producing gas about \$0.37 per thousand cubic feet of gas sold. Under the conditions prevailing at this time, and so far as can be seen in the future, the company is justified in basing their cost of production of gas upon the present market price of oil.

Comparison of rates, with those charged by companies operating in other sections of the country may be permitted, but they are in no manner comparable and are not evidence upon which rates can be made, unless the conditions are alike as to cost of production, operation, maintenance and distribution. While comparisons might serve to assist in fixing rates, they have little value unless conditions are similar. For instance: A rate made for gas manufactured from coal in Salt Lake City at a cost of \$2.25 per ton, could not be applied to gas made from coal in Reno at \$10 per ton; or, gas manufactured from oil in Los Angeles at \$1.35 per barrel, against oil in Reno at \$2.53 a barrel. Such comparisons only have a relative value in the making of rates. Twenty towns and cities in California, Arizona, Idaho, Oregon, and Washington, with varying populations of from 5,000 to 100,000, I find have rates from \$1.90 per thousand cubic feet, the general average for all being \$1.62. In sixteen of these towns, gas is manufactured from coal costing from \$3.30, the average, to a maximum of \$5.75 per ton. In eighteen towns where gas is manufactured from oil, I find the price of oil varies from \$1.09 per barrel to \$3.22 per barrel. In Ventura, California, where oil costs \$1.09 per barrel has a rate of \$1.62 per thousand cubic feet. Imperial Valley oil is \$3.22 per barrel and the rate is \$1.75 net per thousand feet. Boise, Idaho, with 23,000 population, coal \$5.75 per ton, rate \$1.75 per thousand feet. Of the twenty-six cities mentioned which have rates comparable to Reno, only two have a rate less than \$1.50 per thousand cubic feet.

There are now served by the Gas Company 1,770 customers in Reno and 1,000 in Sparks. As the number of customers taking gas has steadily increased during the last two years, it is reasonable to assume that they find it profitable to use gas for cooking and domestic purposes, at present rates, than to use wood at prices ruling during this period.

In view of the fact that this is the only complaint that has reached the Commission regarding service or rates for gas in Reno and Sparks, and that the charges in the complaint were not specific, but general; and further considering the prices charged for other classes of fuel—coal and wood—the Commission is of the opinion that the complaint is not sustained by the showing made, and that the rates now in effect should not be changed at this time.

An order denying the petition and dismissing the case will be made.

ORDER

In conformity with the above opinion, the case will be dismissed.

PUBLIC SERVICE COMMISSION OF NEVADA.

Dated August 16, 1918.

By E. H. WALKER, *Secretary*.

Case No. 138—Water Rates in Carson City.

Complaint was filed by Miss B. Smith against the Carson Water Company, on March 23, 1917. This case was consolidated with Investigation and Suspension Docket No. 2; hearing held on March 24, and opinion and order issued May 21, 1917.

Case No. 139—Water Rates and Service in Tonopah.

On March 18, 1917, a complaint was received from Mr. H. H. Atkinson, District Attorney of Nye County, on behalf of various citizens of Tonopah, alleging that the Water Company of Tonopah was making a charge for water service when, in fact, it was not in a position, owing to the freezing of the water, to furnish such service. Correspondence developing the fact that the company made no charge for the period in which no service was rendered by it, the case was considered closed.

Case No. 140—Water Rates and Service for Fire Protection in Wonder.

On June 13, 1917, complaint was received from Mr. J. M. Keir, of Wonder, Nevada, relative to alleged excessive charges for water service and insufficient fire protection at that place.

The case was covered by informal correspondence, and the company evincing its willingness to adjust matters and complainant failing to press the complaint, it was considered closed.

Case No. 141—Electric Rates at Winnemucca.

Verbal complaint was made March 9, 1917, by Mr. A. E. Trousdale covering electric rates at Winnemucca. Conference was held regarding the matter and complainant decided, in view of information secured, not to press the complaint.

Case No. 142—Electric Service Connections for Lights.

On March 24, 1917, oral complaint was made by Mrs. Luiza Pacheco who requested that the Truckee River General Electric Company be directed to make her electric lighting connections at the rear of her residence instead of at the front. She informed the Commission that she was willing to pay the necessary expense of making the connections in this manner. Adjustment was made by the defendant company on representations by the Commission.

Case No. 143—Alleged Poor Electric-Power Service.

At a meeting of the Tonopah Mine Operators' Association, held at Tonopah, April 17, 1917, a resolution was adopted as follows:

WHEREAS, There have during the past few months been a number of delays and losses to the mining and milling operations in the Tonopah district, due to

power interruptions, certain specific interruptions during the present April being:

April 14, 1917—Two delays of approximately one-half hour each.

April 15, 1917—One delay of seven hours.

April 17, 1917—Two delays of approximately one-half hour each.

WHEREAS, The majority of the mines in the Tonopah district are now being at some distance below the water level and interruptions in power submersion of pumps which it may take weeks to uncover;

WHEREAS, The power interruptions are expensive to the mining and operations of the district, due to idleness of labor employed, disarranging the chemical and mechanical processes in milling, curtailment of production, etc., it is roughly estimated that a loss of one hour's time in the camp is a loss of \$500 to the operating companies;

WHEREAS, A loss of wages to employes often occurs during power shutdowns, power interruptions of short duration sometimes causing the entire shift to be laid off for the eight-hour period;

WHEREAS, It is the opinion of the members of this Association that the delays are not due to "Acts of God, fires, strikes, etc.," but rather to lack of diligence on the part of the Nevada-California Power Company in keeping the lines in a fair state of repair; that the majority of the poles on the power lines of the Nevada-California Power Company leading into this district are rotted at the surface of the ground; that not over half of the poles have been stubbed, making them liable to failure in every high wind; that the insulation of the line is not heavy enough, so that leaks of current cause burned poles;

WHEREAS, It is the complaint of some of the members of this Association that the voltage and frequency at times is irregular, causing loss of production and shut-down of mining machinery;

Therefore be it resolved, That this Association request the Nevada-California Power Service Commission to investigate the condition mentioned above, and to take such steps as are necessary so that the Nevada-California Power Company may remedy the faults; that this Association suggest that the Engineer of the Public Service Commission be sent to Tonopah so that through him the Commission may become fully acquainted with the facts, with a view to seeing that the proper remedies are applied; that the Secretary of the Association send a copy of this resolution to the Public Service Commission.

This complaint was filed with the Commission April 20, 1917, the matter taken up with the Nevada-California Power Company and the Commission is the power company service at Tonopah. A hearing was held at Carson City July 9, 1917.

A great deal of testimony was introduced at this hearing showing that there was a great voltage variation. The frequency, however, appeared to be quite satisfactory. The interruptions were not to be quite serious at times for some mining operations especially principally when sinking new shafts and work of that character where there was not much storage space and considerable water. The interruptions were considered as likely to be so expensive that the Tonopah Extension Mining Company installed their own standby steam engine of a rated capacity of 400 K.W. The Nevada-California Power Company was also considering installing a steam standby plant to take care of the most important work.

The evidence presented to the Commission at this hearing indicated that it was the belief of both sides that satisfactory voltage regulation could only be obtained with a synchronous condenser, or some other apparatus, all of which would be very expensive in first cost and difficult under war conditions to obtain, besides being costly to maintain and operate.

The service not improving after the hearing, the Commission Engineer was sent to Tonopah December 6, 1917, to make an investigation.

His investigation and report to the Commission showed that

the voltage variations were due to lack of cooperation between the receiving and sending end of the Power Company's system. Several other matters also developed in the investigation. A meeting was arranged between the engineers of the various mines and the Power Company and it was agreed that the latter would regulate its system to maintain a satisfactory voltage at Tonopah. An agreement was also reached by which the Engineer of the Goldfield Consolidated Mines at Goldfield undertook to take up all voltage matters with the Mine Operators Association at Tonopah as he felt that if the voltage at Tonopah was satisfactory, it would most likely be so at Goldfield. This agreement was concurred in by an engineer representing some mines at Manhattan.

With this understanding the Commission held the matter in abeyance to see how it would work out. At a conference held at Goldfield July 1, 1918, however, it was alleged that the service had been all right for a few months but it was commencing to deteriorate. The Power Company then agreed to take up the matter with the Goldfield Consolidated Mines Company and arrange to have them resume the operation of their storage battery set which they had recently shut down on account of unsatisfactory rate schedule. (See case 157 for further data on this point.)

To date nothing has been settled definitely, and the Commission has now prepared an order to be issued in a few days.

Case No. 144—Power Contracts.

On May 9, 1917, the Nevada Packard Mines Company filed a complaint alleging that the Nevada Valleys Power Company was discriminating against complainant in power contracts. The Commission at once investigated the various contracts of the Nevada Valleys Power Company with large consumers and notified the respondent company that an adjustment of its legally filed schedules of rates or of its contracts should be made. The company promised to comply with these instructions and the case was closed.

Case No. 145—Expense of Thawing Sewer Mains in Tonopah.

On May 10, 1917, a complaint was received from Mr. R. J. Highland who alleged that he was compelled to pay for the thawing of the sewer main of the Tonopah Sewer and Drainage Company in the street in front of his residence, and that the latter company refused to make refund. Complainant was advised that the Commission had no jurisdiction.

Case No. 146—Water Service in Luning.

On June 2, 1917, the Luning Feed Yard Company complained against the Luning Water Works alleging that the respondent company refused to pump water into complainant company's tank without guarantee that complainant make good any damage that might be caused by so doing. Complainant was advised that such a demand appeared reasonable, under the circumstances, and the matter was considered closed.

Case No. 147—Water Service in Rhyolite.

On June 3, 1917, the Commission received a complaint from Mr. W. C. Jones, of Rhyolite, against the Indian Springs Water Company, alleging that the water company refused him water service. Corre-

spondence resulted in showing that the matter was a controversy to the payment of arrears of water bills, and the Commission advised that, unless it could be settled between the parties, a hearing would be held. As the complaint was not pressed further the matter was considered closed.

Case No. 148—Water Service Connections in Tonopah.

On June 5, 1917, a complaint was received from Mr. John [redacted] who alleged that the Water Company of Tonopah refused to run a line more than twenty feet from the main for the purpose of affording service connections to complainant's residence and three other residences. The question was dealt with informally and resulted in an offer by the Water Company to dig eighty feet of ditching, or twenty feet of pipe to a house in question. Complainant was advised that, under the circumstances, the offer was reasonable, and the matter was closed.

Case No. 149—Expense of Thawing Sewer Pipes.

On June 17, 1917, District Attorney H. H. Atkinson, on behalf of various citizens of Tonopah, complained of the Sewer and Drainage Company, alleging that the respondent ordered bills to its patrons to cover the expense of thawing frozen sewerals; that various disputes had resulted and that the sewer company stated that sewer service would be disconnected in all cases where bills were not paid. The Commission advised the Tonopah Sewer and Drainage Company that it had no legal right to attempt to enforce payment of bills for thawing pipes by disconnecting its service. On further complaint by Mr. Atkinson, he was advised to bring a legal action proceeding if the company persisted in its policy of disconnecting service in order to give the Commission time to make a full investigation of the situation in the regular manner. On July 3, 1917, Mr. Atkinson advised the Commission that the bills in question were the subject of a compromise, and the case was considered settled.

Case No. 150—Water Rates to the Carson Creamery Company.

On July 6, 1917, complaint was made by the Carson Creamery Company alleging that the rates charged it by the Carson Water Company were unjust, unreasonable and excessive. Citation was issued on July 6 and hearing held August 27, 1917. Before the promulgation of the order the Creamery Company decided to obtain water by drilling a well upon its premises, and the matter was considered closed.

Case No. 151—Water Service in Candelaria.

On August 9, 1917, the Commission received a complaint from M. Kelly, of Candelaria, Nevada, alleging discrimination on the part of the Esmeralda Water and Milling Company in shutting off water supply. The controversy appeared to turn on the cost of installing service pipes and was finally settled by the company, which made necessary repairs and resumed service to complainant.

Case No. 152—Alleged Excessive Charge for Water.

Complaint was filed by Mr. P. F. Beardsley, of Tonopah, on September 15, 1917, against the Water Company of Tonopah, alleging excessive charges for water. Mr. Beardsley complained of the monthly charge of \$2 which was based upon the number of rooms in the residence. An investigation of the premises was made by the

sion's Engineer, who reported that the charges made by the company were in full accordance with its filed schedule, and the complaint was dismissed.

Case No. 153—Water Service in Rhyolite.

On October 7, 1917, complaint was received from Mr. J. D. Lorraine, of Rhyolite, against the Indian Springs Water Company, which he charged with discrimination in taking up service-pipe connections. The matter was dealt with informally. It appeared that the town of Rhyolite was gradually being depopulated, some sections containing only empty houses, and that the pipe which the company was removing had not been in use for four years. The water company reported having but eleven customers, and stated that the cost of laying a pipe line to the residence of complainant would cost from \$75 to \$100. An endeavor was made to compromise the matter by complainant agreeing to prepay cost of laying connections, the cost to be rebated in monthly bills, but Mr. Lorraine did not accept this proposal. As the conditions in Rhyolite appeared to be most uncertain, the Commission believed the water company's position sound, and dismissed the complaint.

Case No. 154—Alleged Excessive Meter Deposit and Excessive Charge for Water.

Mr. Martin L. Freeman wrote the Commission that the Goldfield Consolidated Water Company had a \$10 deposit from him, whereas the deposit required under the present schedule was only \$5. His deposit was made at the time that \$10 was called for by the water company's tariff, and the matter had never been adjusted by him. He also complained about the high bills, claiming that he used only 700 gallons during the summer months while using water on a small garden, but during August when he used no water for his garden, he received a bill for 1,300 gallons.

The matter was taken up with the water company, and a satisfactory adjustment made to Mr. Freeman by refunding \$5.

Case No. 155—Alleged Unjust Charge for Sewer Service.

The McNamara Mining Company of Tonopah wrote under date of December 8, 1917, stating that the Tonopah Sewer and Drainage Company was charging them \$5 per month for the sewer service, whereas the charge should be only \$3. The rate for sewer service is \$3 per month for residences and \$5 for offices. A personal examination of the matter showed that for some time the building had a room used as an office by the company, and the service rendered could hardly be called anything else but office service. A satisfactory settlement was made with all parties by explaining matters to the mining company, and by the Sewer Company allowing the discount for prompt payment to be apply on the back bill.

Case No. 156—Alleged Excessive Water Pressure.

Under date of December 18, 1917, W. J. Maxwell complained that the Carson Water Company was carrying an excessive pressure causing breakage of boilers and excessive wear on faucets.

An investigation showed that the pressure was from 100 to 125 pounds in different parts of the city. The water company had recently installed additional and larger pipe to obtain a higher pressure under orders from this Commission, and upon request of the citizens of Carson

City. To reduce the pressure would affect it for fire protection and a hearing was set but was deferred from time to time to the absence of complainant's attorney. The case was finally dismissed as the complainant did not desire to go ahead with the case.

Case No. 157—Alleged Excessive and Discriminatory Charges for Electricity and Power.

The Goldfield Consolidated Mines Company of Goldfield contracted under date of February 20, 1918, that the rates of the Nevada-California Power Company were excessive, and that the rate schedule for the class of consumers that the complainant operated under were higher than would be justified by the cost of them.

The complainant under date of April 1, 1910, entered into a one and a half year contract with the Power Company for power at a rate of \$6 per H.P.-month, the horsepower being defined as the average daily maximum one minute sustained peak shown on a graphic coltmeter.

At the expiration of the contract the only rate available was the regular published rate which was much higher.

The mining company has a synchronous motor generator and storage battery plant which allowed operations with a high-load factor. The schedule in effect did not give any benefit to the mining company if it operated its storage battery set and handled its operations to keep down the peak load.

An informal conference was held at Carson City March 1918 between the representatives of the mining company and the Power Company at the request of the company. A formal hearing was held at Carson City, April 8, 1918. It was brought out at this hearing that the load of the mining company had increased nearly 50% with practically no increase in K.W.H. This was due to there being no advantage to the mining company to distribute their heavy work over a two hour period, and it was found more convenient to do as much work as practicable on the day shifts. The practical shutdown of the storage battery plant was admitted by the power company to have caused the voltage variation of both Tonopah and Goldfield.

It was also shown that the Tonopah Extension Mining Company allowed an additional discount on account of having a steam engine plant, said plant, however, only to be operated during interruption of service and for the sole use of the mining company. The Goldfield Consolidated Mines Company contended that if their batteries were running continuously a better rate should be allowed as compared to the service and kept down peaks.

The engineer of the Goldfield Consolidated Mining Company, B. B. Beckett, presented data on the power company's system with the Southern Sierras Power Company, a subsidiary company of the Nevada-California Power Company operating in California. He suggested a rate of \$2.77 per peak H.P. per month plus ¼ cent per K.W.H. This would have resulted in charges for the mining company being considerably less than before but other and smaller concerns would have had their rates increased thereby, thus working on them an underserved load.

An informal hearing was held at Goldfield July 1, 1918, with representatives of the mining company, the power company and the

Commission at which the power company agreed to make suitable recompense to the mining company if it would operate its storage battery set. The mining company also stated that conditions had changed somewhat since the filing of complaint and they would therefore ask that formal adjudication by the Commission be deferred. To date of going to press nothing has been settled between the two companies.

Case No. 158—Request for Increase in Rates.

The Indian Springs Water Company of Rhyolite, Nevada, asked permission to increase their minimum rate from \$2 to \$3.75 per month. There being no protest the Commission allowed the increase, after the usual thirty days' notice, to take effect January 10, 1918.

Case No. 159—Alleged Unjust Charge for Back Charges for Sewer Services.

Under date of May 7, 1918, Wonnacott and Hall of Tonopah complained that for eight or ten years they had paid a monthly charge of \$3 for sewer service, but that the Tonopah Sewer and Drainage Company had unexpectedly presented them with a bill for arrears in service charges of \$240. Failing to pay this, their service was cut off. The matter was taken up with the sewer company, who replied that a satisfactory settlement had been reached between all parties, Wonnacott and Hall agreeing to pay the arrears, whereupon service was resumed. It was alleged that the place should be classed under the business-rate schedule and not that of the residence.

Case No. 160—Interruptions of Electric Service.

Messrs. Curler and Castle, as attorneys for citizens of Carlin, entered complaint on January 7, 1918, against the electric light service rendered by the Southern Pacific Company to that town. Allegation was made that the town would frequently be without light for periods of from ten days to three weeks. The matter was taken up with the railroad company, who stated that their machines were overloaded, and that various other troubles had interfered with the service. Besides, they claimed that the Carlin people had been using two or three times as much current as they were entitled to under the flat rate.

Before this complaint could be adjusted, namely on April 19, 1918, the railroad company filed a request (Case No. 168) to be allowed to discontinue service of electric current to the town as they needed all that could be generated for their own requirements. They claimed that being under the control of the Federal Government they could not spend any money for other than purely railroad work. There being no apparent legal grounds whereby the railroad could be prevented from suspending service, the Commission granted the permission subject to complaint of the citizens of Carlin, which action automatically disposed of this case No. 160.

Case No. 161—Claim for Lamp Renewals.

The Winnemucca Water and Light Company complained to the Commission January 19, 1918, that the city refused to pay its electric bills for street lighting. They stated that the current was all furnished through a meter but the city insisted that lamps should also be furnished by the company, with no additional charge allowed.

The Commission answered that this was entirely a matter of agree-

ment, and if a copy of such agreement be sent to this office, the Commission would be glad to suggest a solution of the difficulty. The electric company was also told that in the absence of any formal agreement to the contrary it would be considered that only current water was furnished.

No answer being received to the letter of the Commission, it was assumed that the case was settled to the satisfaction of all parties and dismissal was ordered.

Case No. 162—Alleged Unreasonable Increase in Water Rates.

The Mutual Creamery Company of Reno complained January 18, 1918, that their rate for water furnished by the Reno Power, Light and Water Company had been increased from \$4 per month to \$10. An investigation by the Commission's Engineer showed that the company used 330,000 gallons during December, 1917, and they admitted that they used much more during the summer months. After showing that the meter rate for Carson City is 10 cents, and that of a city on the coast having a municipal plant, 8 and 9 cents per 100 gallons, they were satisfied that injustice was not being done, and the complaint was deemed adjusted.

Case No. 163—Request for a Demand Meter Rate.

The Mutual Creamery Company of Reno entered complaint January 18, 1918, of the rate charged for electric power by the Reno Power, Light and Water Company, and wanted a demand meter charge.

This creamery company has plants in several States and at all of them they have a charge based on peak load plus an additional charge for current. Upon applying two scales of rates used in other creameries, it was shown that their use would result in a higher rate than at present. The company, upon this showing, requested the case be held in abeyance for a time. To date nothing further has been heard, so the case has been ordered dismissed.

Case No. 164—Request for Electric Line Extensions.

February 14, 1918, a petition was received, signed by nine residents of Arlington Avenue, Reno, asking that the Reno Power, Light and Water Company be ordered to extend service to them. Upon bringing the matter up with the company, a proposal was received to the effect that if the consumers would advance the cost of the new line and the former, a matter of about \$1,900, the extension would be made. Providing that the petitioners would agree to pay a minimum charge of \$2.50 each per month and that all in excess would be rebated to the consumers at the rate of 25 per cent per month, said rebate to be applied to the money advanced. Also, all money not refunded, together with the line, to become the property of the company at the end of five years.

This proposition was forwarded to the petitioners, and as they did not press the case is considered closed.

Case No. 165—Alleged Excessive Charge for Electric Current.

Mr. J. H. White, District Attorney of Mineral County, February 18, 1918, wrote to the Commission enclosing copies of correspondence with the Nevada-California Power Company. Complaint was made of a charge of 20 cents per K.W.H. at the newly served town of Hawthorne. When the matter was taken up with the Nevada-California

Company it developed that said company was the successor in interest to the Pacific Power Corporation, and the charge made was in accordance with the tariff schedule properly filed by the latter company. Mr. White was notified to that effect and nothing further was heard from him.

Case No. 166—Alleged Fast Electric Meter.

Mr. H. W. Huskey of Reno complained informally on March 30, 1918, that his bills for electric light service were too high. He thought his meter was registering an excessive amount of current, and stated that the Reno Power, Light and Water Company refused to change the meter.

On taking the matter up with the company the Commission was informed that a test of the meter had been made, and it had been found correct. The company did not want to replace the meter because if for any reason it should develop that subsequent bills were less, the impression would be created that the first meter was wrong, and result in a claim for rebates. The meter test was made by the City Electrician of Reno, Mr. L. A. Seitz, also an Assistant Engineer of the Commission, who made the above report of the correctness of the meter. On explaining the matter to Mr. Huskey, he asked that the case be dropped.

Case No. 167—Request for Information on Water Rates.

Robert L. Waggoner, attorney at law, Yerington, Nevada, wrote on March 8, 1918, asking for information about the water rates for the town of Mason supplied by the Mason Water, Light and Power Company. It appeared that the citizens of Mason found the present rates prohibitive for small war gardens.

This matter, however, of rates for war gardens had already been taken up by the Commission with all the water companies of the State, and the Mason Valley Water, Light and Power Company showed by statement and other data that they could not supply additional water without digging new wells and installing additional equipment.

Mr. Waggoner was advised that the schedule of the company was on file in accordance with the law, and that to bring the matter before the Commission formally he would have to file a complaint against the published rates as on file and proceed as usual in all cases. Nothing further has been heard.

Case No. 168—Request for Permission to Discontinue Electric Service.

The Southern Pacific Company requested that they be allowed to discontinue electric light service which had been furnished at Carlin. This matter was disposed of in connection with Case No. 160, previously noted.

Case No. 169—Alleged Incorrect Minimum Charge for Electric Service.

On May 22, 1918, Mr. William Donovan of Silver City made complaint to the Commission alleging that the Truckee River General Electric Company was charging him a \$2 minimum for electric power service, whereas he believed the minimum should be but \$1. On taking it up with the power company it developed that Mr. Donovan had a three-phase service, and as he was doing but little work he was being charged on a schedule that carried the lowest minimum charge, which

was \$1 per meter. His service required two meters. When explained to Mr. Donovan, he accepted the explanation and the was closed.

Case No. 170—Alleged Inadequate Water Service.

About June 5, 1918, several of the citizens of Dayton complained that the water system owned by Mr. J. M. Damon did not supply sufficient water for their needs.

The Commission's Engineer found it necessary to make several visits before the matter was satisfactorily settled. It was found that the trees had worked their way into the wood pipes used, shutting off the flow of water more or less.

When about 300 feet of pipe was uncovered and replaced the service was very much improved, and there has been no further complaint.

Case No. 171—Power Service Requested from Competitor.

The Lovelock and Woolsey Light and Power Company of Lovelock, Nevada, wrote to the Commission on June 1, 1918, stating that the Lovelock Valleys Power Company, a competing utility, had on several occasions refused to supply power at the usual rates, and asked if it was advisable to cite them before the Commission. Reply was made that no formal complaint might be filed and the case could take the course and the Commission could then go into the matter thoroughly. No formal complaint was filed so the matter is considered closed.

Case No. 172—Alleged Excessive Rate for Water.

On June 7, 1918, Mr. E. W. Smith, proprietor of the Monarch Hotel at Wonder, complained that the Wonder Water Company, which had previously been charging him \$30 per month for water for his hotel and for the irrigation of a few trees, had raised his rate. An investigation by the Commission showed that by its order in Case 51, a rate was fixed of \$25 per month for the hotel with an allowance of 5,000 gallons, all over to be charged at the rate of \$3.50 per 1,000 gallons. However, it appears that later, by a verbal agreement had by Mr. Smith with the former superintendent of the Water Company, he agreed to pay \$30 per month for what seems to have been unlimited service. The new superintendent put the hotel on a meter basis and adhered to the rates in the schedule on file with the Commission. This led to a bill exceeding \$30.

It was found necessary for the Commission's Engineer to visit Wonder to investigate the matter and he found that conditions had changed materially since the order in Case 51 had been made; that the hotel business had dropped off about half; that the camp was in a depressed condition, etc. Mr. Smith said that he needed only 3,000 gallons per month, and expressed himself as satisfied with the following schedule suggested: Minimum charge, \$15 per month for a minimum 3,000 gallons; \$5 per 1,000 gallons for all over 3,000 and under 5,000 gallons; \$2.50 per 1,000 gallons for the next 2,000 gallons; irrigating rate of \$1 per 1,000 gallons for all in excess of 7,000 gallons.

This scale was accepted by the Water Company and the schedule was duly filed with the Commission.

During the summer months, however, Mr. Smith again found fault with the rate, finding that he used about 7,000 gallons, which

his bills up higher than was satisfactory. Nothing further has been done, however, as the amount used in the winter months will probably strike an average.

Case No. 173—Failure of Water Company to Give Adequate Service.

June 26, 1918, the following telegram was received from Wadsworth: "All war gardens in this town dying account negligence of manager of water works. Have had no water since June 22d. No effective efforts to remedy. Can you not take some immediate action to get water here and save the gardens? Answer. By Committee, N. M. Kerr, J. P. Sheehan."

The Commission's Engineer was in Wadsworth by the same evening and found that the management of the water works was in no financial condition to take care of repairs to the reservoir or to the diversion dam on the Truckee river, and that the system had not been properly kept up for several years at least.

The manager, Mr. Esden, disclaimed his ability to rehabilitate the plant, and was finally persuaded to lease it to one of the townspeople, Mr. E. M. Pierson, for the period of one year, with the option of renewal for two years more. The new management then engaged a few men and had the water distributed all over the town by noon of June 28.

On July 14, 1918, the Commission was complimented by Mr. Kerr on the quick action in a letter in which he stated that 31 gardens would have been ruined, besides lawns and trees, had not the matter been handled so promptly and efficiently.

Case No. 174—Water Service Interfered With.

July 11, 1918, the Commission was in receipt of a letter from the city of Sparks, enclosing a letter of date June 25, 1918, which had been written to the Reno Power, Light and Water Company complaining that the water service had been seriously interfered with by the presence of dead fish in the pipes. Even the activities of the water-wagon were hampered by the extraneous matter which choked the sprinkler. It was stated that no answer had been had to this letter, and the offices of the Commission were asked to assist in getting an adjustment.

The matter was immediately taken up with the water company and an answer was received, dated July 17, in which the manager, Mr. Campbell, stated that the letter from the city of Sparks had been received and the trouble, a defective screen over an outlet pipe, had been corrected immediately, but not soon enough to prevent some fish from getting into the pipes. No further complaint being received from the city of Sparks, the matter was considered closed.

Case No. 175—Inadequate Water for Fire Protection.

On August 14, 1918, the Attorney-General filed a letter with this Commission containing a copy of a petition which was directed to Director-General McAdoo by the citizens of Caliente, Nevada. The petition sets forth that a bad fire, resulting in serious loss and damage to the business portion of the town had taken place, and that practically no protection was afforded by the water supply of the town. This supply is furnished by the Los Angeles and Salt Lake Railroad, which is paid \$100 per month to keep the town tank full. At this time the tank was not full and therefore the citizens allege that the railroad

company was derelict in duty and asks for damages, and the Director-General should take steps to fix the responsibility. The petition was referred to the Commission through Senator Henrich and the matter was immediately taken up. The Caliente people advised that the Commission had no jurisdiction over damage whatsoever; that the matter of future service, or of rates considered should be the citizens' desire. A letter was also directed to the General Manager of the Los Angeles and Salt Lake Railroad for a full statement of the facts in the matter of water service. A reply setting forth the situation was promptly received from the company and a copy sent to Caliente. It was distinctly shown here that the town itself owned the tank and had not kept it in proper repair so that the railroad could keep its part of the agreement, viz, keep the tank full. Also it was stated that repairs had been made immediately after the fire and the company had ordered that the tank be kept full at all times. Nothing further has been heard from any party in this case.

Case No. 176—Alleged Frequent Interruptions in Electric Power Service.

August 4, 1918, the Manhattan Consolidated Mines Development Company of Manhattan, Nevada, through their attorney, Wm. F. Miller, filed a complaint against the Nevada-California Power Company, alleging frequent interruptions in the electric service, causing them considerable loss. Two interruptions in June were claimed, one of 16 hours and 26 hours; in August, on the 13th and 14th, they claimed interruptions of 15 hours. The complaint also averred that the line between Millers and Manhattan was understood to be in bad shape.

The matter was at once taken up with the power company; a letter was received claiming that the line was in good order, but that the interruptions in June were due to trouble with lightning, and in August to the burning of a pole from the same cause. According to the records the interruptions were as follows: June 7th, 8 hours, 38 minutes; June 18th, 7 hours, 11 minutes; August 13th, 14 hours, 45 minutes. It was stated that the interruption in August was longer than usual because one of their patrol linemen got lost and they did not dare turn on the power until he had reported, lest he should be caught while making the repairs. Keeping off the current until a full day was accounted for is in accordance with good practice.

Upon the explanations of the power company being presented to the complainant, they were found satisfactory, and the complaint was withdrawn.

Case No. 177—Alleged Refusal of Utility to Extend Water Service.

Mr. James Byers of Lamoille, Elko County, under date of August 12, 1918, complained that the Lamoille Mercantile Company refused to extend their pipe line about two hundred feet to serve his residence. The matter was taken up with the company which claims that it always been its custom to make a comparatively small charge for service, \$1.50 per month, with the understanding that the consumers would stand the expense of service connections from the company's line. In the present writing this matter has not been adjusted.

Case No. 178—Request for Suggestions in Fixing Water Rates.

April 11, 1918, the city of Yerington asked that the Commission

its Engineer to confer with the city authorities, make an examination of the water system and give advice as to possible improvements in service rates. On April 17 the Engineer visited Yerington in compliance with this request and offered some suggestions having to do with operation and service. The matter of rates could not be touched since the Commission could not countenance any adjustment without a formal hearing where all the parties might be present.

The city did not care to bring up the matter formally therefore the matter was closed.

Case No. 179—Gas Service and Rates in Tonopah.

On November 9, 1918, Mr. Frank K. Pittman of Tonopah filed a complaint against the Nevada Gas Company alleging poor service and high rates for gas furnished in that town. The Commission took up the matter with Mr. L. P. Lowe, the General Manager, who immediately replied that he would make a personal investigation of the various allegations in the complaint with a view to equitable adjustment. At the time of closing this report this case has not been completed.

INVESTIGATION AND SUSPENSION DOCKETS

At the Legislative Session of 1917, the Commission was empowered to suspend any application for an increase in rates pending an investigation, thus giving the Public Service Commission the same privilege which the Railroad Commission has. Said suspension may be for the period of 60 days with the privilege of resuspension for an additional 60 days if the matter cannot be properly investigated and settled within the first period.

In accordance with this law, the Commission held up for investigation four applications for increases in rates, as follows:

I. & S. Docket No. 1—Rates of the Steamboat Canal Company.

The Steamboat Canal Company having filed a statement on March 2, 1916, announcing that a rate of \$7 per inch, payable in advance, would be charged for water for irrigation during the irrigating season of 1916, the Commission suspended the rate on March 14, 1916. The suspension was for a period of 60 days. The Commission, being unable to complete its investigation of the reasonableness of the schedule prior to May 31, 1916, the rate was further suspended to July 30, 1916.

Hearing was held on April 5, 1916, and the following order issued June 13, 1916:

BEFORE THE PUBLIC SERVICE COMMISSION OF NEVADA

In the Matter of Water Rates of the Steamboat Canal Company for the Year 1916, a Corporation. Investigation and Suspension Docket No. 1—Increase of Rates for Water Used for Irrigation Purposes.

OPINION AND ORDER

BARTINE, Chief Commissioner:

This is the third time that the rates of the Steamboat Canal Company have been under consideration by this Commission.

The last order made was in Case U-97, dated September 21, 1915, and reads as follows:

It is hereby ordered, That for the year 1916, and until the further order of this Commission, the Steamboat Canal Company may charge for water served to its patrons, the sum and amount of six dollars per inch, as the same has been customarily measured, and no more.

On March 2, 1916, the respondent company filed with this Commission somewhat informal application for permission to fix a seven-dollar rate for the year 1916, payable in advance, on the first day of April of

This was manifestly an advance upon the rate already in effect, the order of the Commission it was formally suspended pending an tion of the reasonableness of the proposed rate.

Before the time set for the hearing a number of complaints were the Commission by the patrons of the company protesting against the of rates, and on April 5, 1916, a formal hearing was held at the office Commission in Carson City, Nevada.

There seems to have been a misunderstanding on both sides with the order of the Commission made on September 21, 1915, prescribing dollar rate. Some, and perhaps all of the users of the water, claimed accordance with the previous custom of the company they were entitled to reduction of fifty-cents for advance payment. The Steamboat Canal declined to accept this view and insisted that the rate of six dollars rate prescribed was a flat rate and with no discount in contemplation.

It is only just for the Commission to say that in prescribing the six dollars it had in mind the custom of allowing a fifty-cent discount for advance payment. The matter was not specifically covered by the order, the reason that the point was not suggested at any time during the hearing by either party. The Commission assumed that the provision for a reduction on file in its office along with the schedule and was, therefore, a part of the same. In making the new order there was no idea on the part of the Commission to change this custom. The rates were left the same as they were except that upon the upper courses of the canal the lower rates were six dollars, making the rates uniform for the entire length of the canal at six dollars per inch.

Where there was an unexpired contract, of course the order was not to conflict therewith.

This difference of view, however, relates to the rates for the year 1916, the period covered by the order referred to. It is a matter entirely in the hands of the parties and one over which the Commission has no jurisdiction. Disputes between the parties to it can only be settled in the courts. This statement applies to all claims for damages based upon the alleged failure of the company to furnish water as agreed. The Commission is not a court and has no jurisdiction over such questions. Its function is simply to prescribe reasonable rates and establish rules governing the service. If those rules are violated a party may bring an action in court at once arises.

We are now dealing with a new schedule filed March 2, 1916, by the respondent company proposed to charge for the current year at the rate of seven dollars per inch with no provision for any discount. With respect to this new schedule, which was duly suspended, pending investigation, the hearing was held on April 5, 1916, as already stated.

The writer of this opinion sees no reason to depart from the general principles applicable to the making of rates as laid down in the former orders of this Commission, and any change which is herein recommended is a question of figures and not one of principle.

But it is my view in this case that the reproduction value of the canal is not to be considered a fair basis in fixing of rates, as stated in previous orders. This rule is by no means a fixed and iron-clad one. Where the conditions are unusual and normal, it may be conceded that it is about the best way in which rates can be fixed. But there are many cases which are exceptions to this rule, in which the method could not be fairly applied. One of these exceptions is mentioned in a case in which public utilities have been established where the business conditions do not fairly justify the inauguration of the enterprise. In the oft-cited and quoted *Ragan* case, 154 U. S., clearly in this exception.

In this case the construction of the canal was begun more than 30 years ago and seems to have been unprofitable from the beginning. Undoubtedly due to the fact that upon the basis of rates which were then deemed reasonable there was not sufficient demand for the company's water to make the business a paying one, which is only another way of saying that it did not, at the time, warrant the enterprise. Becoming financially embarrassed the property was sold to its present owners for less than one-fourth of its original cost of construction. Under these peculiar conditions, it seems

would neither be fair to take the reconstruction value of the canal nor the price paid for it by the present owner as the basis for the making of rates. The property was, in effect, sold at force sale, and the selling price was in no proper sense a fair measure of its actual value. Having in mind all the circumstances and conditions generally prevailing throughout the district the Commission must use its own judgment and fix such a rate as appears to be entirely reasonable and just to both parties. The prevailing rate for water used for irrigation throughout the district is six dollars per inch flat for the irrigating season. It appears to be conceded that the expense of maintaining this ditch is considerably higher, both relatively and absolutely, than for other ditches in the district by reason of the fact that it is constructed upon a high line, and along the edge of a hill overlooking the irrigated district.

I have therefore reached the conclusion that an initial rate somewhat higher than that prevailing generally throughout the district is justified in the case of the Steamboat Canal Company. For the current year the expenses of cleaning the canal and putting it in condition for the delivery of water have been exceptionally high, amounting to nearly \$4,000. It is estimated by the company that its total disbursements for the year 1916, will amount to \$5,413.83, and the total receipts to \$11,811.75, leaving a net balance of \$6,297.92.

The Engineer for this Commission has estimated that the canal could not be reproduced for less than \$120,000. The net returns for the current year as estimated, namely, \$6,297.92, would be slightly more than 5 per cent upon this amount.

In a section like this where the banking rate upon gilt-edge security is approximately 8 per cent, 5 per cent appears to be a rather low rate of return upon such a valuation. In other cases passed upon by the Commission 9 to 10 per cent per annum has been generally assumed to be a reasonable return upon the investment. If we assume this property to be worth \$90,000, 8 per cent return upon that valuation would be \$7,200 per annum.

It is my best judgment that an initial rate of six dollars and fifty cents per inch, with a reduction of fifty cents for advance payment, will produce approximately this sum, which seems to be a just and reasonable return to the company, and no more than reasonable to the users.

I therefore recommend that an order be made prescribing a rate for the year 1916 of six dollars and fifty cents per inch, with a reduction of fifty cents for advance payment, provided such payment be made on or before the 20th day of June, A. D. 1916.

SIMMONS, Commissioner, concurring:

While I concur with Chief Commissioner Bartine in the order made in the case, I cannot fully concur in the basic principles and the reasoning of the opinion upon which the order is predicated. The writer of the majority opinion says that the reproduction value of the canal is not to be considered a fair basis in fixing of rates. If this be true, any amount that might be placed as a value upon which to fix rates would be a purely arbitrary one, without any real basis other than the private opinion of the Commission or others authorized to fix rates. In my opinion it matters not, for the purpose of this case, and is no concern of the regulating body, what the present owners paid for this canal under forced sale some twenty-odd years ago. They might have fallen heir to it, without paying anything, which would in no manner lessen its value today. To my mind the question which the Commission is called upon to decide is, "What is the fair value of this property today, upon which the owners are entitled to earn a fair return?" In arriving at that value, I know of no fairer or sounder method than the reproduction basis. The Commission must, to some extent at least, have had this in mind when the Chief Engineer of the Commission was ordered to make such valuation of this property, primarily for the purpose of finding some basis of value for the fixing of just and equitable rates. The Commission's Engineer made a reproduction valuation of this property and reported to the Commission that \$120,000 was the least possible cost of reproducing this ditch. This amount was exclusive of any value for the water rights of the company.

While no evidence was introduced tending to show what these water rights might be worth, I am firmly of the opinion that they are highly valuable and that consideration should be given to their value in the fixing of rates. A ditch might be built at greater or less cost than the one now in use, but without the water it would be valueless for any purpose and, in the last analysis, the value

is in the water. Many ditches might be constructed traversing the same of territory but no more water can be obtained from the Truckee river. The available water is already appropriated and the water now flowing in the Steamboat Canal Company's ditch is unquestionably the property of the company and cannot be taken from them so long as they put it to a beneficial use.

In support of this opinion, I wish to cite the opinion of Mr. Justice in the Supreme Court in the case of the *San Joaquin and Kings River and Irrigation Company v. County of Stanislaus* in the State of California, which says in part:

It was suggested, to be sure, at the argument, that it does not appear that the plaintiff offered any evidence as to the water right at the hearing before the supervisors, and therefore that it ought not to be allowed to complain now that nothing was allowed for them. But this evidently is an afterthought. In general, a party may wait until a law is passed, or regulation is made, and then insist upon his constitutional rights.

But it is said that as the plaintiff appropriates this water to distribution and sale it thereby dedicates it to public use under California law, and so loses its private right in same. It appears to me that when the cases cited for this proposition are pressed to the conclusion reached in the present case they are misapplied. No doubt it is true that such an appropriation and use of the water entitles those within reach of it to demand the use of a reasonable share on payment. It may well be true that if the waters were taken for a superior use by eminent domain, those whose lands were irrigated would be compensated for the loss. But even if the rate paid is not to be determined as upon a purchase of water from the plaintiff, still, at the lowest, the plaintiff has the sole right to furnish this water; the owner of the irrigated lands cannot get it except through the plaintiff's help, and it would be unjust not to take that fact into account in fixing the rates.

The opinion further says:

The declaration in the Constitution of 1879 that water appropriated for sale is appropriated to a public use must be taken according to its subject-matter. The use is not by the public at large, like that of the ocean, but by certain individuals for their private benefit. The declaration therefore does not necessarily mean more than that the few within reach of the supply may demand it for a reasonable price. It is unreasonable to suppose that the constitutional declaration meant to compel a gift from the former owners to the users, and that in dealing with the water "appropriated for sale" it means there should be nothing to sell.

To my mind, the case cited and passed upon by the highest court in this State is in direct point to the one now under consideration by this Commission. It clearly sets forth: First, that water lawfully appropriated is the property of the appropriators for their private benefit, so long as it is used for the purposes for which it was appropriated; second, that it is not appurtenant to the soil "except in so far as it is used for its own purpose," and cannot be taken away from its original appropriator; third, that it has a value that should be given consideration in the fixing of rates for its use, aside from the value of the necessary appurtenances, such as ditches or canals, necessary to convey same to place of use.

In the fixing of rates in this case no consideration was given to the value of the water, but to some valuation, more or less arbitrary, upon the canal used in conveying the water to the land, such valuation being the cost of the canal. It would cost to reproduce but some amount between that and what the canal was purchased at, at forced sale many years ago, when both land and water were cheap and easily obtained.

It seems to be that this is an incorrect and unsound method of finding rates for rate-making purposes. For instance, suppose the situation was such that the canal was not needed, and it was found that the company had paid much more for the canal than it was worth or could be reproduced for, would it still be content with the same value between the purchase price and the reproduction price as it now is? Or would the owners have to stand the loss for bad judgment in purchasing the canal more than the property was worth? I feel quite certain that the present

would be the basis determined. In case No. U-44, *Public Service Commission of Nevada v. Nevada-California Power Company*. Mr. Commissioner Shaughnessy, at page 24 of his opinion, says:

The question to be determined in every rate case that comes before the Commission is the *fair present value*, or stated differently, to obtain a valuation *at the time of the inquiry* that will be just and fair alike to the utility and public under the special facts and circumstances in each particular case.

Which, as I interpret it, means a valuation taken at the time of complaint or investigation.

It was frankly admitted by the protestants in this case that it would cost more to construct and maintain this canal, owing to its elevation and the mountainous country traversed, than other canals built to serve lands lower down in the river basin. This being true, a comparison of rates as between this canal, being a high-line ditch, and those traversing the lower river course is not a fair comparison. The value of a service is based, to a large extent, on the cost of rendering the service.

All the lands lying along and being irrigated by this ditch have increased in value to the extent of three or four times their value at the time the ditch was acquired by the present company. This increase in value was not wholly due to the labor and effort of the owners but largely to the increased demand for land near and tributary to Reno, a growing and prosperous city, affording a close and good market for the products of the land. I think that this view is sustained by the fact that unimproved land lying under this ditch and susceptible of being watered from it has quadrupled in value for the reasons stated without the labor of its owners or its development by them. Is it unreasonable to assume that some of the increased value of the land, or "unearned increment," so to speak, made possible by the water from the canal, without which it would be valueless, should also accrue to the canal as well?

In my opinion, this canal could not be reproduced for less than the sum reported by the Commission's Engineer, \$120,000, exclusive of water right value, which should be considered in fixing rates, and that a rate yielding a fair return upon this valuation should be allowed.

The \$90,000 valuation suggested by Chief Commissioner Bartine and apparently accepted by Commissioner Shaughnessy in his dissenting opinion, to my mind, has no basis of fact other than to produce a result, namely, 7 per cent on that value.

I concur in the order as made by Commissioner Bartine, for reasons that are obvious, but I am strongly of the opinion that a rate of \$7 per inch, with the same deduction for advance payment, would have been a more equitable rate and fair to all concerned.

SHAUGHNESSY, *First Associate Commissioner*, dissenting:

I am unable to concur in that portion of the majority opinion giving the Steamboat Canal Company the unqualified right to exact from its present consumers a higher rate of return on the fair value of its property, for the reason that fair consideration of all important elements will, in my opinion, demonstrate that the present rates are sufficiently high.

I concur in the majority opinion that neither the reproduction value of \$120,000, nor the actual investment made when the property was purchased at Sheriff's sale for \$20,000, may fairly be taken as the basis upon which to fix rates in this proceeding. And, if as shown by the majority opinion, \$90,000 is presumed to be the fair value of the property in its present condition, it is proper to note that the net earnings for the year 1915, placed in evidence as amounting to \$6,297 constitutes a return of approximately 7 per cent, and this, in my opinion, is all that the present consumers should be required to pay towards the support of this property—especially when the extent to which they are contributing toward an adequate return is fairly considered.

I have no objection to the Canal Company making an annual return of 8 per cent, or even 10 per cent on the fair value of its property, provided, however, that the burden thereof is not unreasonably and unlawfully imposed upon a service basis less than that upon which the company is obligated to render service. But in exacting this obligation it is my position that the Canal Company must also do its share towards insuring to the consuming public just and reasonable rates, by improving its facilities and cheapening the cost of service.

and in so far as possible, by conserving its water supply and increasing its output.

The Canal Company claims ownership to a water right entitling it to 500 inches of water out of the Truckee river at a point near the Nevada-California State line. It asserts that it starts from the river with that amount of water but only succeeds in carrying and delivering to its customers 2,100 inches of water. From this it is observed that there is a loss of water in transit throughout the course of the canal, comprising a distance of approximately 2 miles, amounting to 58 per cent, which the testimony of record shows is caused by seepage and evaporation—due to the inferior manner in which the canal has been constructed and maintained. This utility cannot fairly be permitted to sit idly by and content itself with a restricted volume of business, and because of increasing expenditures and property values, file with this Commission continuing rate increases to make good a full return on the whole property, when, as shown above, it results that the Canal Company is beneficially devoting to the public only 42 per cent of the fair value of its property.

In my opinion no public utility which shows an operating efficiency of only 42 per cent can be said to be adequately carrying out the objects for which it was created. On the contrary, it must be held to be deficient in this respect and where, as shown in this case, there is a market available for every inch of water covered by said appropriation it must be held that the Canal Company is responsible for that portion of the deficiency in the "return" which a reasonable expenditure for permanent improvements and betterments would insure by conserving its productive supply and thus enlarging its output to the public at compensatory rates. To hold otherwise will unjustly burden the present consumers by requiring them on said 42 per cent service basis to pay an increased return which, if reasonable allowance is made for improvements and betterments to the property, would, without increase in the rates, distribute the return over an increased service basis amounting to 70 to 75 per cent of the total water right in this case.

That the Commission is empowered by the Public Service Commission Act to bring about a more equitable result by requiring the Canal Company to improve its facilities, and thus increase its revenues by an enlarged public service output, is made clear by reference to the following sections.

Section 5 provides that "every public utility is required to furnish reasonable adequate service and facilities."

Section 17 provides that:

Upon complaint made against any public utility that any of the rates, tolls, charges or schedules, or any joint rate or rates, are in any respect unreasonable, or unjustly discriminatory, or that any regulations, measurements, practice or act whatsoever affecting or relating to the production, transmission or delivery or furnishing of heat, light, water, or power, or any service in connection therewith, is, in any respect, unreasonable, insufficient, or unjustly discriminatory, or that any service is inadequate, the Commission shall proceed, with or without notice, to make such investigation as it may deem necessary. But no order affecting said rates, tolls, charges, schedules, regulations, measurements, practice or act complained of shall be entered without a formal hearing.

Section 19 provides that:

If it shall be found that any regulation, measurement, practice, act or service complained of is unjust, unreasonable, insufficient, preferential, unjustly discriminatory, or otherwise in violation of the provisions of this act, or if it be found that the service is inadequate, or that any reasonable service cannot be obtained, the Commission shall have power to substitute therefor such other regulations, measurements, practices, service or acts, and make such order relating thereto as may be just and reasonable.

The testimony of record in this proceeding shows that in General Manager Wheeler's judgment an expenditure of \$15,000 would enable the company to increase the carrying capacity of its canal 1,000 inches. This would give the canal a total carrying and delivering capacity of 3,100 inches of water and

would increase its service capacity to a basis of 68 per cent of the total, as compared with 42 per cent at present.

Summarized, these improvements and the present \$6 rate will produce the following interesting results:

Taking 3,100 inches at \$6 per inch the gross annual revenue would be.....	\$18,600.00
Less expenses and taxes (on basis of 1915).....	5,514.00
Net annual earnings would be.....	\$13,086.00
Above net earnings are equivalent to a "return" of 10 per cent on.....	\$130,860.00

It therefore clearly appears that by an expenditure of \$15,000 for permanent improvements and betterments the Canal Company's ability to serve the public can be enlarged 48 per cent by conserving and delivering to the public 3,100 inches of water instead of 2,100 inches as at present. And in consideration of this enlarged public service it further appears that the Canal Company will, on the basis of a \$6 rate, receive a net income approximating \$13,086 as compared with the present income of \$6,297. In other words, the increase over present income will approximate 107 per cent, or \$6,789.

For the reasons stated hereinbefore I am opposed to relieving the Canal Company from its just obligation to the public, and to the imposition of an unjust burden on the present consumers by increasing their rates from \$6 to \$6.50 for the irrigation season of 1916.

ORDER

OFFICE OF THE PUBLIC SERVICE COMMISSION OF NEVADA.
CARSON CITY, NEVADA, May 24, 1916.

All Commissioners Present:

Pursuant to the conclusions reached in the opinion by Bartine, Chief Commissioner, the rates of the Steamboat Canal Company for the irrigation season of the year 1916, are hereby fixed as follows:

Six dollars and fifty cents (\$6.50) per inch, provided that if payments be made in full for the season by any user of water of said Steamboat Canal Company, on or before June 20, 1916, the rate shall be six (\$6) dollars per inch; the purpose of the order being to allow a discount of fifty (50) cents per inch, which, in view of the delay in the decision of the disputed questions involved in this case, is to be construed as an advance payment.

This Commission does not undertake to pass upon any disputed questions which have arisen as to the charges by the said Steamboat Canal Company for water during the year 1915, or upon any claims for damages which the users of said water may have on account of the failure of the said Steamboat Canal Company to furnish the same as needed for irrigation purposes, the Commission considering that those matters are exclusively for the courts to determine.

BY ORDER OF THE COMMISSION.
E. H. WALKER, *Secretary*.

I. & S. Docket No. 2—Water Rates in Carson City.

The following opinion and order, issued May 17, 1917, gives the history of this matter very fully:

BEFORE THE PUBLIC SERVICE COMMISSION OF NEVADA

IN THE MATTER OF PROPOSED CHANGES IN THE RATES AND } U-I. & S. No. 2
CHARGES OF THE CARSON WATER COMPANY. }

OPINION AND ORDER

SIMMONS, Commissioner:

On January 10, 1917, the Carson Water Company filed with this Commission an amended schedule of rates, which, in a number of instances, showed increases over the rates then in effect.

Therefore, on February 16, 1917, the Commission made its order in due form suspending for a period of 60 days the application of the new schedule. This suspension was afterwards extended for another 60 days and the period of suspension will expire on the 23d day of June, 1917.

On March 24, 1917, a formal hearing took place at the office of the Commission. The respondent company was represented by its attorney, Mr. Frank Murphy, and by Messrs. E. B. Yerlington and E. S. Dougherty, its Secretary and Superintendent, respectively. Although not a formal complaint in the first instance, Carson City, through its Board of Trustees, had filed a protest later against the proposed advance in the rate for water furnished for municipal purposes, and the city was represented by its Mayor, Hon. George Gillson, and Mr. Elmer Baldy, its attorney. There were no other appearances, but a written complaint from Miss B. Smith, the keeper of a boarding-house in Carson City had been filed with the Commission, and was made a part of the record.

The respondent company has been engaged in the business of supplying Carson City with water for more than 40 years. The original franchise, which is in the form of a simple resolution, was granted by the Board of Commissioners of Ormsby County, Nevada, on the 12th day of October, 1874. On March 1, 1875, a similar grant of authority was made to Mr. E. D. Sweeney, and still later all of the rights and interest of the said Sweeney were acquired by the Carson Water Company. The franchise referred to contained no conditions except that when pipes were laid the streets and alleys should be restored to as good a state and condition as before the laying of the pipes, and that the work of laying the pipes should be conducted with dispatch and without unnecessary hindrance or inconvenience to the inhabitants of Carson City.

It is not necessary to consider whether the franchise thus granted was a thing of value to be reckoned as a part of the company's assets in the establishment of its rates. The company itself has made no claim upon that head. But it may be said that the granting of the franchise was primarily for the benefit of the people of Carson City, who stood in pressing need of an adequate supply of good water, which could be obtained in no other way than through the operations of a fairly well-equipped water company. The Water Company is strictly local to Carson City in its operations, and whatever value attaches to its property as a whole is given to it by the patronage of the people of the city. Therefore, for the purposes of this case, the question whether the franchise has a value or not may be left entirely out of consideration.

So it may also be said that the fact of the company being entitled to lay up streets for the purpose of laying pipes should be given no weight. Such acts are inseparably connected with the performance of the work which the company was originally authorized to do. It is impossible to lay water pipes without digging up streets. In this a water company differs quite materially from a telephone or telegraph company, the excavations of which are confined to the digging of a few holes in which the poles are to be set.

During the last summer and fall, the water company dug a trench nearly the entire length of Carson Street for the purpose of laying new and larger mains. This was done not only with the concurrence of the city authorities but as we understand, their actual approval. It was for the double purpose of having a larger and stronger main laid along the principal street and also to obviate the necessity of any digging and disturbing of the surface of the street after the completion of the paving which the city authorities then had in view. It may be said in this connection that in addition to laying large and suitable mains along the line of Carson Street, within the last three years the company, acting under the order of this Commission, laid 8,400 feet of new ten inch main between its reservoir and the distributing system within the city. These improvements have involved the company in very considerable expense, probably from \$15,000 to \$18,000. This being all new work, is fairly chargeable to capital account and not to operating expenses.

According to the best, and, in fact, the only evidence before this Commission the total present value of the Water Company's property used in the service of supplying the people of Carson City with water is approximately \$87,822.75.

Some two years ago the respondent company began the work of installing meters for the measurement of the water used by its various patrons. This is a legitimate method of determining the quantity of water used by each consumer. The installation of the meters cost a considerable sum, while the cost of the same, including their reading, also adds something to the company's operating expense. The records of this case disclose the fact that, under the meter system, the earnings of the company have been somewhat less than they were under the flat rates which previously prevailed; that in some instances the charges to the individual consumer were increased in small amounts, but that in the majority of cases the charges were reduced so that, upon the whole,

the revenue of the company was less than it had been under the flat-rate system of charging previously in vogue. Presumably, the amended schedule providing for increases to certain of the consumers was intended to meet this reduction of revenue, as was also the raising of the minimum from \$1.50 to \$2.

The question for the Commission to consider is whether, under all the circumstances and conditions, these increases should be allowed.

All of these cases have two sides—that of the utility and that of the people served. It is the duty of the Commission to do justice to both as far as possible, to see to it that the utility is permitted to make just and reasonable charges, and also that the people shall have good service at fair rates. The question of revenue, while an element to be considered in rate-making, is not the only thing to be kept in view. Comparisons are sometimes instructive and have a more or less important bearing according to the extent that the conditions may be similar or dissimilar. Therefore, a few comparisons will be given.

At Austin the charge up to 15,000 gallons is \$1 per thousand; over 15,000, 75 cents; minimum charge from \$1 to \$1.50, according to the character of the residence. Fallon, up to 3,000 gallons, 33½ cents; 3,000 to 5,000, 35 cents; 5,000 to 8,000, 30 cents; over 10,000, 25 cents; minimum, \$1. Elko, for residences, up to 8,000 gallons, 31¼ cents; over 8,000, 25 cents; minimum charge \$2.50. For business, up to 5,000 gallons, 50 cents; 5,000 to 8,000, 40 cents; 8,000 to 50,000, 25 cents; 50,000 to 200,000, 20 cents. Ely, up to 25,000 gallons, 50 cents; 25,000 to 50,000, 40 cents; 50,000 to 150,000, 30 cents; 150,000 to 600,000, 25 cents; over 600,000, 20 cents; minimum charge \$1.50 to \$2.50, according to character of residence. Goldfield, first 5,000, \$3 per thousand gallons; next 5,000, \$2.70; next 5,000, \$2.25; next 10,000, \$1.80; next 25,000, \$1.35; minimum charge for two rooms, \$1.20; over two rooms, \$1.80; three rooms with sewer, \$1.80; over three rooms with sewer, \$2.40. Manhattan, first 1,000 gallons, \$7.50; 1,000 to 2,000, \$6.75; 2,000 to 3,000, \$6, over 3,000, \$5.25. Tonopah, up to 2,000, \$3.25; 2,000 to 3,000, \$3; 3,000 to 5,000, \$2.75; 5,000 to 7,500, \$2.50; 7,500 to 10,000, \$2.25; minimum charge for two rooms, \$1.25; three and four rooms, \$2; other residences, \$2.50. Winnemucca, first 30,000, 15 cents; next 20,000, 12½ cents; over 50,000, 10 cents; minimum charge, \$1.50 to \$2.50, according to the character of the residence. Reno, minimum charge, \$2 to \$2.50, with higher charge for larger lots. In Reno meters are not in use.

The conditions existing in Goldfield, Tonopah, and Manhattan are so different from those in Carson City that the comparison counts for almost nothing. The conditions at Winnemucca, Elko, Fallon, Ely, and Reno are more nearly alike. They are by no means identical, but there is a certain similarity. Taking the rates given above as a whole, it is quite obvious that by comparison the Carson City rates are not excessive. It is known to every resident of Carson City that its trees and lawns are a very valuable asset, and the manifest purpose of the water company in raising the minimum rate was the preservation of these trees and lawns. It was felt that with a low minimum and a high base rate many people, particularly tenants, would not use sufficient water to keep the trees and lawns in good condition, as a result of which Carson City would lose a great portion of the beauty for which it is so justly noted. It seems, however, as if the advance to \$2, under all circumstances is too much, and that \$1.75 minimum would be more nearly just and equitable.

The base rates fixed for residences paying 25 cents per thousand for the first 2,000 gallons; 15 cents for the next 5,000; 12½ cents for the next 6,000; and over 13,000, 10 cents, appear to be reasonable, and in connection with a minimum charge of \$1.75, the people of Carson City will be enabled to use a very much larger quantity of water than heretofore, with but a trifling addition to the cost.

The company has furnished a list of 22 persons who will continue to be supplied with water at \$1 per month minimum, and 78 others who will receive it at \$1.50. To these people there is no increase whatever proposed over existing rates. The total number of consumers is something more than 400, and an examination of the records for the year 1916 shows that some 52 out of the total paid rather more upon the meter rate than upon the flat rate; while the remainder all paid either the same or less under the meter rates than they had been paying. Hence, as before stated, the revenue of the company upon the meter basis was considerably less than it was upon the basis of the flat rates previously in effect.

There appears to be no good reason why boarding-houses such as those situated in Carson City should be charged any more than private residences of

the same general character. These boarding-houses are conducted upon small scale. They accommodate but very few people, and the greater part of the water used is for irrigation purposes just the same as in any private residence. It is, therefore, recommended that boarding-houses be classified as residences.

No good reason has been given for any advance in the rate to be made to the city for municipal purposes, except that more revenue is desired. The proposed advance from \$120 to \$175 per month should be disallowed. If the same is true of various advances proposed to be made for commercial purposes, in short, where the new schedule either lowers the rates or maintains them at their former figure, they should be approved; but all proposed advances should be disallowed.

This brings us to a consideration of the question of the company's rate. It will be effected and what it will amount to if an order be made conforming with the views expressed in this opinion.

It appears from the records that for a six-year period preceding the adoption of this new schedule, the net earnings of the Water Company amounted to about 8¼ per cent upon a valuation of \$100,000. This was because the depreciation had been made by the company for depreciation and the net had been carried to the account of profits to be distributed in dividends. Had a depreciation fund been provided for, the net would have been 7 per cent upon a \$100,000 valuation. For the year 1916 the gross earnings of the company were \$16,124.85, while the operating expenses and taxes were \$7,497. After deducting the usual depreciation account of 2 per cent on \$75,000, the depreciable value of the plant, we have \$1,500 more, making a total of \$8,997, leaving \$7,124.85. This amounts to 8.1 per cent upon the valuation as given of \$87,832.70.

Under the conditions existing in Carson City, this appears to be a fair return. In some other portions of the State, where conditions are more favorable and the future less secure, higher rates of return have sometimes been allowed. In Carson City the future seems to be about as well assured as it can be elsewhere. There is no reason to believe that for many years to come the growth or business of the city will be materially less than at the present time. On the contrary, it is fair to look forward to a small and continuous growth. In the Eastern States, where almost everything is upon a lower plane and where public utilities usually represent larger investments than in Nevada, with which we are now dealing does, courts and commissions have been firm in the view that from 6 to 7 per cent is a fair return upon the value of the property used in the service. Hence, 8.1 per cent appears to be a fair return for both the utility and the people as any figure that could be made.

An order should be entered in conformity with the views herein stated.

ORDER

OFFICE OF THE PUBLIC SERVICE COMMISSION OF NEVADA
CARSON CITY, NEVADA, May 17, 1917.

Present—H. F. BARTINE, Chief Commissioner; W. H. SIMMONS, Secretary; E. H. WALKER, Secretary.

IN REGULAR SESSION:

Pursuant to the views expressed in the foregoing opinion, it is ordered that the rates of the Carson Water Company now in effect shall remain in effect until the 20th day of June, 1917. It is further

Ordered: That the new schedule of rates filed by the said Water Company with this Commission on the 11th day of January, 1917, is hereby approved subject to the following provisions and exceptions:

Boarding houses shall hereafter be classified as residences and rates fixed accordingly.

The rate for Carson City for municipal purposes shall remain at \$175 per month.

No increased rates for any other service shall be allowed except the minimum rate for residences is specifically fixed at \$1.75 per month. The lower minimums in certain cases provided for in the company's schedule shall remain in effect.

The schedule as filed on said January 11, 1917, shall be modified accordingly and take effect from and after June 20, 1917.

PUBLIC SERVICE COMMISSION OF NEVADA

May 17, 1917.

E. H. WALKER, Secretary.

I. & S. Docket No. 3—Water Rates in Goldfield.

The Goldfield Consolidated Water Company filed an amended schedule of water rates for the town of Goldfield, increasing the charges, effective April 4, 1918.

It appearing advisable to make a full investigation before allowing these increases to go into effect, the Commission ordered a suspension as follows:

At a general meeting of the Public Service Commission of Nevada, held at its offices in Carson City Nevada, on the first day of April, A. D., 1918,

INVESTIGATION AND SUSPENSION DOCKET NO. 3*Increase in Rates for Water Service in Goldfield, Nevada.*

IT APPEARING, That there has been filed with the Public Service Commission of Nevada by the Goldfield Consolidated Water Company an amended schedule increasing the rates for water service in Goldfield, Nevada, to become effective April 4, 1918, such amended schedule reading as follows:

AMENDED SCHEDULE WATER RATES—EFFECTIVE APRIL 4, 1918*Water Rates*

First 5,000 gallons.....	\$6.00 per thousand
Next 5,000 gallons.....	4.00 per thousand
Next 5,000 gallons.....	3.00 per thousand
Next 10,000 gallons.....	2.00 per thousand
Next 25,000 gallons.....	1.35 per thousand
All over 50,000 gallons per month at a rate not to exceed \$1 per thousand gallons.	

Minimum Monthly Charges—No Sewer

Residences up to 2 rooms, \$1.20; Consumption 200 gallons.
 Residences over 2 rooms, \$1.80; Consumption 300 gallons.
 Stores, offices, shops, etc., \$1.20; Consumption 200 gallons.
 Barber shops, hair-dressing parlors, theaters, halls, etc., rooming-houses, \$1.80; Consumption 300 gallons.
 Saloons, restaurants, boarding-houses, laundries, bottling-works, livery stables, \$2.40; Consumption 400 gallons.

Minimum Monthly Charge—With Sewer

Residences up to 3 rooms, \$1.80; Consumption 300 gallons.
 Residences over 3 rooms, \$2.40; Consumption 400 gallons.
 Stores, offices, shops, etc., \$1.80; Consumption 300 gallons.
 Barber shops, hair-dressing parlors, theaters, halls, etc., garages, \$2.40; Consumption 400 gallons.
 Saloons, restaurants, boarding-houses, laundries, office buildings, hotels, rooming-houses, bakeries, \$3; Consumption 500 gallons.
 A penalty of 10 per cent will be added to all bills for service, which penalty will be rebated from bills paid on or before the 10th of the month for all service rendered the preceding month. No bills will be rendered for less than fifteen days' service, or one-half the minimum monthly charge for either water or sewer.

IT FURTHER APPEARING, That said amended schedule makes certain increases in the rates for water service in the town of Goldfield, Nevada, and the rights and interests of the public appearing to be injuriously affected thereby, and it being the opinion of the Commission that the effective date of the amended schedule above set forth should be postponed pending hearing and decision thereon. It is, therefore

Ordered, That the Commission, upon its own motion, without formal pleading, enter upon a hearing concerning the propriety of the increases and the lawfulness of the rates, charges, regulations and practices designated in the amended schedule set forth above. It is further

Ordered, That the operation of the amended schedule above specified be suspended and that the use of the rates, rules and regulations therein stated be deferred until the 3d day of June, A. D. 1918, and it is further

Ordered, That a copy of this order be filed with such amended schedule in the offices of the Public Service Commission of Nevada and that a copy hereof be forthwith served upon the utility publishing such amended schedule and that such utility party to said amended schedule, viz., the Goldfield Consolidated Water Company be, and is hereby made, the respondent to this proceeding, and that it shall be duly notified of the time and place of the hearing ordered.

BY THE COMMISSION.

E. H. WALKER, *Secretary*.

Following this a hearing was held in Goldfield on June 29, 1918,

after which, in order to make the investigation thorough, a resolution order was issued. Within the specified time, viz., on August 1918, opinion and order issued which is set forth in full below:

BEFORE THE PUBLIC SERVICE COMMISSION OF NEVADA
INVESTIGATION AND SUSPENSION DOCKET No. 3

Application for Increase in Rates for Water Service in Goldfield, Nevada

OPINION

BARTINE, *Chief Commissioner*.

This proceeding is based upon the application of the Goldfield Consolidated Water Company for leave to increase its rates to water consumers in the town of Goldfield, Esmeralda County, Nevada. The Water Company filed with the Commission a schedule of rates which were very much higher than the rates in effect. These rates were suspended by the Commission for a period of 60 days and afterwards suspended for 60 days more, pending investigation.

The investigation took place in the town of Goldfield on June 29 of the present year, with Chairman Bartine presiding. It will not be necessary to give an opinion to do more than slightly touch the points brought out at the hearing.

Primarily the Water Company assumed that it should be permitted to increase its rates because at the time of the former order of the Commission reducing those rates it was suggested in the opinion of one of the Commissioners that lower rates would lead to an increased consumption of water which would protect, in large measure at least, the Water Company against loss of revenue. This point, however, was merely made, argumentum. The Supreme Court of the United States in some of its decisions has made similar suggestions but it contains no element of certainty. In some cases it is probably true and in other cases it is not. That all depends upon the circumstances and conditions surrounding the particular community in which the service is rendered. The testimony in this case shows that following the order referred to above there was a heavy falling off in the revenue to the company. This, however, was not to be due to the fact that the town of Goldfield has been upon the downward slope of its population constantly diminishing, with the result that the Water Company has fewer patrons than it did at the time the order was made. Every one understands that conditions in a mining camp fluctuate rapidly. So when conditions improve and again they become very much worse. In this case the business conditions in Goldfield have deteriorated, and the result has been a heavy falling off in the revenues of the company. My own concurrence in the former order of the Commission reducing the rates was not based upon the theory that the lower rates would lead to increased consumption to the extent that would maintain the revenues of the company. My view was that the rates as prescribed were reasonable *per se* regardless of whether the company was getting much money or little. I expected to see some falling off in the revenue but not so much as has in fact taken place.

It now appears that the total net income of the company is somewhat less than \$6,000 per annum. This is about $4\frac{1}{2}$ per cent upon the value of the property given to the property in the proceeding before the Federal Court in 1911. The valuation was \$151,000, being the assumed commercial value of the property in contradistinction to the reproduction cost. It was held by the Court that under the abnormal conditions existing in Goldfield, with all values diminishing and the population constantly becoming smaller, the commercial value, while it might not be an absolutely true measure, came much closer to it than would the reproduction cost.

At the hearing in Goldfield in the present proceeding the representatives of the company disclaimed any idea or purpose of obtaining full return upon the reproduction cost of the property or the recovery of the original investment. The application for an increase was based solely upon the value of the property which was being rendered to the community.

It is not to be denied that a water company or other utility engaging in business in a mining camp, with its fluctuating fortunes must expect to take its chances along with other business interests. This idea, however, cannot be carried too far. A utility serving a community with water requires a heavy investment in a property which becomes fixed in its situs and cannot be removed at will. Other business concerns can change their

and move out whenever business conditions seem to require it. The property of this company cannot be removed excepting as its pipe lines and other paraphernalia may be taken up and sold as junk. The effect of this would, of necessity, be to render its water rights of no value unless some other beneficial use could be found for the water.

It must be borne in mind, however, that the Water Company, in this case, for a number of years had a complete monopoly of the water business in Goldfield, and at a time when the prosperity of that great camp was at its height. Every private individual who invested in property at that time in the said town did so upon the expectation of having his investment completely returned to him within three or four years, and in many cases it is probable that this expectation was realized. It appears, however, that the Water Company did not proceed upon this theory in the conduct of its business. It began with an initial rate of \$7 per thousand gallons, while in the neighboring town of Tonopah, the initial rate was \$10 per thousand gallons. Had this company made a rate of \$10 instead of \$7 graduating downward, it is probable that the investment would have been entirely made good long before the Public Service Commission ordered a reduction in the rates. But it was not done, and we are now confronted by the condition as it exists today.

The question immediately before the Commission is whether the company should be allowed to increase the initial rate of \$3 per thousand gallons, as fixed by the Commission, to \$6 per thousand gallons, as proposed by the Water Company, with gradations downward with increased consumption of water. In my opinion the demand of the Water Company should not be granted. At the same time, it seems not unreasonable that some small increase should be allowed. An increase might be quite small and affect each individual consumer but slightly, and still materially improve the financial condition of the company. In dealing with a matter of this kind both sides should be given full and fair consideration. The Commission should determine what are fair and reasonable rates for the water users to pay, and what, under all the circumstances and conditions, will amount to a fair return to the Water Company for the service rendered. Obviously the Water Company cannot expect to realize any such returns as it obtained when the prosperity of Goldfield was at its maximum. Just as clearly does it appear that the present small population of Goldfield can hardly expect to receive water service, which is rendered by this company, with its great plant and abundant water supply, at the same rates per gallon or per capita that would be just and reasonable for a town containing ten or fifteen or twenty thousand people. In matters of this kind large communities always have the advantage. It is something that is unavoidable because it grows out of business conditions.

Recently the Government of the United States has taken full control of all main trunk-lines of the country for war purposes. Almost immediately upon assuming such control fares and freight rates upon the various roads were very substantially increased. This was due to the fact that the Government had incurred certain obligations to the railroads in the way of compensation. Under these circumstances and conditions prices have raised abnormally in all lines of business. It does not seem quite fair to hold a public utility down to the dead level of former rates, while prices of almost everything else are soaring skyward. For example, the net return of this company of \$5,900 per annum means a great deal less to the company than that sum meant at the time the former order was made. Those who receive this income must meet their current expenses out of it, and those expenses have probably been advanced not less than 50 per cent.

It does not seem to the Commission that at this juncture the allowance of a small advance in rates would be unjust or work any particular hardship upon the people of Goldfield. The raise of \$3 per thousand for the first 5,000 gallons to \$4, and for the next 5,000 gallons from the \$2.50 rate to \$3.50 would entail no great hardship upon the people of Goldfield, and at the same time it will result in a moderate increase in the revenues of this company.

It is only proper in this connection to take into consideration the fact that probably the revenues of the Water Company derived from the fire hydrants of the town will cease within the next year. In fact some of it has already ceased. In dealing with matters of this kind we must, of necessity, look somewhat into the future. If, at this time, we could look forward and see that there was a fair prospect of a considerable increase in the business of the Water Company this Commission would not look with favor upon the smallest increase

in rates. On the other hand, looking again forward, if we can see that there is a strong probability of a material decrease in the Water Company's rates, that fact should also be taken into consideration. This is the policy which the Commission has always pursued, and it is straight in line with the policy of every other Public Service Commission in the United States. It also accords with the views of the courts as they have been expressed with reference to rate cases.

An order should be entered in accordance with these views.

I concur: W. H. SIMMONS, *Second Associate Commissioner*.

ORDER

OFFICE OF THE PUBLIC SERVICE COMMISSION OF NEVADA
CARSON CITY, NEVADA, August 1, 1918.

Present—H. F. BARTINE, Chief Commissioner; W. H. SIMMONS, Second Associate Commissioner; E. H. WALKER, Secretary; F. O. BROILL, Clerk.

In the matter of the amended schedule of water rates filed with the Commission by the Goldfield Consolidated Water Company, April 4, 1918.

Such schedule has been duly suspended by the Commission.

It is hereby ordered, That the schedule of water rates filed with the Commission on April 4, 1918, by the Goldfield Consolidated Water Company, the same is hereby disapproved.

As a substitute therefor the Commission orders the following water rates to be effective September 1, 1918:

Water Service

For the first 5,000 gallons.....	\$4.00 per month
For the next 5,000 gallons.....	3.50 per month

Rates for water consumption in excess of 10,000 gallons per month shall be at the minimum charges and rates covering all other classes of service shall be the same as those now in effect.

PUBLIC SERVICE COMMISSION OF NEVADA

Dated August 1, 1918.

By E. H. WALKER, *Secretary*.

I. & S. Docket No. 4—Water Rates of Steamboat Canal Company.

The Steamboat Canal Company, having made application for an increase in rates for water for irrigating purposes, effective January 1, 1918, the Commission deemed it advisable to suspend the application pending examination and hearing.

The schedule was accordingly suspended, then resuspended, during which period two formal hearings were held at Reno, Nevada, the first on August 5, 1918, and the second on October 8 and 9, 1918. The Commission's decision follows:

BEFORE THE PUBLIC SERVICE COMMISSION OF NEVADA

Investigation and Suspension Docket No. 4

At a general session of the Public Service Commission of Nevada held at Carson City, Nevada, on the 14th day of December, 1918.

INCREASE IN RATES FOR WATER FOR IRRIGATION PURPOSES FILED BY STEAMBOAT CANAL COMPANY

Hearing held August 5, 1918, at Reno, Nevada, before H. F. BARTINE, Chief Commissioner, and W. H. SIMMONS, Second Associate Commissioner.

Continuation of Hearing, October 8-9, 1918, before J. F. SHAUGHNESSY, Chief Associate Commissioner, and W. H. SIMMONS, Second Associate Commissioner.

Appearances:

S. H. WHEELER, President of the Steamboat Canal Company, *Petitioner*.
W. M. KEARNEY, Attorney, representing the water users, *Protestants*.
ROBERT RICHARDS, Attorney for Steamboat Canal Company.
SARDIS SUMMERFIELD, Attorney for Steamboat Canal Company.

OPINIONS AND ORDER

SIMMONS, *Commissioner*:

This case was brought to the attention of the Commission by the filing by the Steamboat Canal Company on May 28, 1918, of a new schedule of rates for water for irrigation purposes to be supplied to patrons of the company for the season of 1918, said rate to be ten dollars (\$10) per inch.

The Steamboat Canal Company, by its President, filed with and attached to the schedule of rates applied for, a sworn statement of receipts and disbursements for the year 1917 purporting to show that the net revenues of the company under existing rates do not give a fair return upon the value of the property rendering the service.

The rates as applied for in the new schedule very substantially increased the rates now in effect, therefore the Commission did not feel warranted in allowing the increases without investigation as to the reasonableness of the rates and the necessity of such increase. On June 15, 1918, therefore, the schedule filed by the Steamboat Canal Company was suspended, and the case was set for hearing and investigation in Reno, Nevada, on August 5, 1918.

On June 25, 1918, a complaint was filed by a number of water-users served by the Steamboat Canal Company, protesting against the proposed increase in rates, setting forth their reasons for such protest and asking that an investigation be made by the Commission, and that the increase in rates be denied.

On several occasions, in previous years, the commission has been called upon to adjudicate the differences arising between the Steamboat Canal Company and the water-users served by them, as to rates and service of said company. A vast amount of testimony was taken and data accumulated at these former hearings as to the original cost, the reproduction cost, new, and the present value of the physical property of the Steamboat Canal Company, all of which having a bearing upon the question of the rates charged for the service rendered the water-users.

A valuation of the property of the Steamboat Canal Company, "exclusive of water right or franchise value," was made by the Commission's Engineer, assisted by a disinterested engineer, and a separate valuation was made for the water-users. Reports of these several valuations were made and introduced in evidence at the former hearings and are of record with the Commission, and will be used in the consideration of the present case.

The value of the property rendering a service is largely the basis for fixing reasonable rates for such service. In the present case the question of the valuation of the property was raised only incidentally.

The reason assigned by the Steamboat Canal Company in their petition for an increase in rates was based largely upon the contention that the cost of maintenance and upkeep had materially increased during the 1917-1918 season, due to increased cost of labor, material and supplies of all kinds necessary to the operation of the property. In support of this claim a statement showing actual expenses incurred up to August 1, 1918, and of estimated expenses for the balance of the year was offered at the hearing. While some errors of accounting was disclosed and opinions differed as to whether some of the items of expense were properly charged to the expense account, these differences were not of sufficient importance to materially affect the general result.

The Steamboat Canal Company, having no depreciation or maintenance account set aside out of earnings, it naturally follows that all maintenance and upkeep costs, whether regular or special, would have to be charged to expense or capital account. As nothing has been included in capital account for "working capital" it would seem that interest on money borrowed for yearly maintenance might properly be allowed as an item of expense, in lieu of return upon an equal amount used as invested capital necessary to the conduct of the business.

It was claimed, and the record in this and former hearings so shows, that for a period of years prior to 1917, excepting unusual seasons when heavy snows during the winter caused greater damage than usual, the number of days' labor, amount of material and supplies necessary each year to clean, repair and operate the ditch were, upon an average, about the same, and that the total operating cost each year did not vary greatly.

Assuming then, that during the years 1917 and 1918 it required approximately the same average number of days' labor, the same amount of material and supplies needed to clean, repair and operate the ditch as it did during the years prior to 1917, a comparison of the relative cost of labor, material and supplies

in the years 1917-1918 with the cost prior to these years, shows obviously it must be admitted, that the cost of operation in 1917 and 1918 must of necessity be greater than in former years, and probably it will remain so until conditions governing these costs again become normal.

In connection with this case there is one feature to which special attention should be drawn. The Steamboat Canal Company has a practical monopoly in the furnishing of water for irrigation of lands lying tributary to its ditch shown in this and former hearings before the Commission that there is an urgent demand for more water, and if it could be supplied many acres of valuable land now lying idle could be brought under cultivation. The water is available, but owing to the inadequacy of the ditch to carry it, it cannot be used. It is shown by the record that by enlarging the ditch at certain points along the line it could be made to carry an additional four or five hundred inches of water, thereby furnishing water for a considerable acreage of new land, also serving to increase the revenues of the company sufficiently to warrant the expenditure required. Having the water available, and a practical monopoly in its distribution, the Commission is of the opinion that every effort should be made by the Canal Company to enlarge its ditch so it will carry additional water so greatly in demand.

From all the evidence before the Commission, and making due allowance for discrepancies in accounting and for deductions for items not properly chargeable to expense, it would appear that the total cost of maintaining and operating the Steamboat Canal Company for the year 1918, actual and estimated, would be approximately from \$8,500 to \$9,000, leaving a net revenue after deducting operating expense of some \$5,500.

The Commission is of the opinion that the rate of ten dollars (\$10) per inch applied for by the Steamboat Canal Company in their petition for an increase in rates is excessive and not justified at this time, and it will be denied.

It is assumed and established in both law and equity that a public utility corporation is entitled to earn a fair return upon the value of its property, and useful in rendering a service.

In view of the evidence and all conditions in this case, the Commission is of the opinion that the Steamboat Canal Company is entitled to an increase over the rates now in effect, and will make an order fixing a rate for all water for the season of 1918 and succeeding years, until changed by order of the Commission of seven dollars and fifty cents (\$7.50) per inch, payable at the end of the season. For payment on or before June 1st of each year, a count of twenty-five cents (25 cents) per inch shall be allowed.

SHAGHNESSY, concurring:

During the year the Government has authorized and paid a heavy increase in prices for practically all essential materials and supplies that have been used for war purposes, and in connection therewith the government has horizontally increased railway transportation charges 25 per cent. Under these circumstances and conditions there has been a corresponding increase in the cost of labor, and, therefore, prices have risen abnormally in all lines of business.

There is testimony in a previous case covering the rates of this company which was not included in the pleadings, and which has been made a part of the record in this proceeding, that the carrying capacity of the Steamboat Canal can be increased 1,000 inches by regrading and improving the waterway a distance of approximately 7 miles, and which it was estimated by George Wheeler, Manager, could be accomplished at a reasonable cost, considering the importance of the increased service to the patrons and the revenues of the company.

The water is in demand; an immediate market awaits it; and, from the standpoint of community upbuilding and the prosperity of Reno, the improvement should be made. Unless this is done the water will ultimately be available for the Fallon and Pyramid districts, and it will not be available for the district.

The Steamboat Canal has a water-right covering 5,000 inches, and from the Truckee River with that amount of water, but, due to obstructions, seepage and evaporation, is able to deliver and sell only 2,300 inches. All for a 30 per cent loss in transit, which seems to be liberal, this canal should have available for sale and distribution, if adequately improved and maintained, 3,500 inches of water, or 1,200 inches more than was delivered during the recent year.

From this it may be inferred that such increased volume of salable water might, without increase in the rates, take care of a substantial addition to the capital account and pay a fair return on the investment. This question, however, is not specifically before us, nor is the testimony sufficiently clear and definite to warrant the Commission in making an order to this effect.

The issue presented for consideration is the company's rate schedule, based on its present operations and filed in accordance with law, providing for an increase in rates, from the present maximum rate of \$6.50 per inch to \$10 per inch.

The case was comprehensively and ably handled for the water-users by Attorney William M. Kearney. Under the testimony adduced by his witnesses and his cross-examination of General Manager Wheeler for the Steamboat Canal Company, the \$10-rate in question was shown to be unjust and excessive and its application is, therefore, denied by the Commission.

In lieu thereof, I am of the opinion that, under all the circumstances, a maximum rate of \$7.50 will be just and fair for the irrigating season of 1918.

I, therefore, concur in the conclusion reached by my Associate.

OFFICE OF THE PUBLIC SERVICE COMMISSION OF NEVADA,
CARSON CITY, NEVADA, December 14, 1918.

ORDER

Pursuant to the conclusions reached in the foregoing opinions by Commissioners Simmons and Shaughnessy, it is hereby

Ordered, That the application of the Steamboat Canal Company to increase its rate for irrigation service to ten dollars (\$10) per inch be denied; and it is further

Ordered, That the Steamboat Canal Company shall make a charge of seven dollars and fifty cents per inch for water for irrigation purposes for the irrigation season of 1918 and each successive year, unless otherwise ordered by the Commission; *provided*, that when prepayment for said season of 1918, or any succeeding season shall be made on or before June 1 of that year, the charge shall be seven dollars and twenty-five cents per inch for such water for irrigation purposes.

BY ORDER OF THE COMMISSION.
E. H. WALKER, *Secretary*.

All of which is respectfully submitted.

J. F. SHAUGHNESSY,
First Associate Commissioner,
W. H. SIMMONS,
Second Associate Commissioner.

E. H. WALKER, *Secretary*.

**ANNUAL REPORTS OF ELECTRIC, WATER, AND
GAS UTILITIES FOR THE YEARS ENDING
DECEMBER 31, 1916, AND 1917**



ELECTRIC AND GAS UTILITIES
POPULATION OF TERRITORY SERVED, AND INCOME ACCOUNT

Company	Population of territory served		Total operating revenues		Total operating expenses	
	1916	1917	1916	1917	1916	1917
Canyon Power Company ^a	1,500	1,500.00	\$25,200.43	\$29,466.42	\$23,172.38	\$24,847.24
City of Fallon Electric System	2,000	2,500	13,536.78	14,550.32	8,141.67	9,366.36
Consolidated Power and Telephone Company	2,000	2,500	18,062.70	20,670.55	9,324.53	14,686.27
Douglas Milling and Power Company	2,000	2,000	1,666.50	2,943.59	501.83	935.54
Elko Lamolle Power Company	3,150	3,150	41,826.44	44,367.55	18,826.68	21,605.16
Ely Light and Power Company	3,500	3,500	45,899.65	56,362.97	37,644.29	44,970.90
Las Vegas Land and Water Company	300	300	2,191.85	2,316.05	2,373.18	3,496.53
Linville, R. (Wander)	300	300	1,351.70	1,694.95	1,334.53	1,410.60
Lovelock & Woolsey Light and Power Company	1,200	1,200	14,578.09	13,951.70	11,636.71	12,408.62
Mason Water, Light and Power Company	2,200	2,200	2,678.14	6,177.70	2,637.68	4,537.91
Nevada-California Power Company	14,000	15,000	787,876.50	787,593.13	320,480.85	378,434.72
Nevada Consolidated Copper Company	3,500	3,500	22,997.88	23,826.63	21,879.41	25,520.08
Nevada Valleys Power Company			74,025.90	92,140.50	50,842.19	53,859.09
Pacific Power Corporation	1,000	1,000	133,984.29	*23,023.05	65,837.53	*25,829.45
Reno Power, Light and Water Company	13,500	13,500	196,464.78	206,442.50	73,959.04	80,567.86
Southern Pacific Company, Carlin Plant			3,097.55	1,205.81	4,570.98	2,521.89
Southern Pacific Company, Mina Plant ^b			482.17	1,488.00	997.08	1,196.45
Southern Pacific Company, Montello Plant			1,168.50		2,513.08	
Truckee River General Electric Company	8,000	8,000	258.97	284.00	835.26	350.68
Verdi Lumber Company			210,801.32	289,870.37	66,541.57	88,849.46
Winnemucca Water and Light Company	2,500	2,500	2,345.07	2,651.63	2,819.13	3,159.87
Carson City Coal Gas Company	2,466	2,466	29,031.53	*0,314.10	16,048.45	22,153.55
Las Vegas Gas Company	2,500	2,466	5,321.50	5,773.83	3,623.65	4,182.92
Nevada Gas Company	2,500	2,500	7,239.17	7,623.68	7,623.68	9,369.65
Reno Power, Light and Water Company	13,500	13,500	20,438.86	22,815.11	18,105.73	24,053.31
			60,590.08	69,405.82	31,446.36	39,465.21
Totals	74,916	76,616	\$1,769,129.45	\$1,754,639.13	\$303,607.52	\$397,732.27

^aReported for first three months of 1917 only, then sold to Nevada-California Power Company.^bService discontinued in 1917.

1916 figures of Elko Lamolle Power Company from report of June 30, 1916.

ELECTRIC AND GAS UTILITIES
INCOME ACCOUNT

Company	Taxes		Depreciation		Total operating expenses, taxes and depreciation	
	1916	1917	1916	1917	1916	1917
Canyon Power Company.....	\$198.00	\$160.58			\$23,370.38	\$25,007.82
City of Fallon Electric System.....	568.92		\$2,115.28		8,141.67	9,366.36
Consolidated Power and Telephone Company.....	93.24				12,008.73	16,804.41
Douglas Milling and Power Company.....	1,812.25	207.85	84.86	84.85	679.97	1,228.24
Elko Lamolle Power Company.....	1,852.49	2,127.90	3,961.62	4,822.57	24,599.45	28,056.63
Ely Light and Power Company.....	46.98	1,917.40	3,116.40	4,674.60	\$43,238.23	\$62,211.81
Las Vegas Land and Water Company.....		46.33			2,420.16	3,544.86
Linville, R. (Wonder).....					1,334.58	1,410.60
Lovelock & Woolsey Light and Power Company.....	476.72	495.84	550.00	550.00	12,663.43	13,454.46
Mason Water, Light and Power Company.....	136.65	98.30			2,774.33	4,626.21
Nevada-California Power Company.....	41,819.43	43,056.17	78,000.00	72,165.00	440,100.28	493,656.89
Nevada Consolidated Copper Company.....	350.00	405.30			22,229.41	25,925.33
Nevada Valleys Power Company.....	2,049.06	2,242.27			52,891.25	66,101.36
Pacific Power Corporation.....	6,660.28	1,500.00			671,639.34	27,329.45
Reno Power, Light and Water Company.....	25,843.90	31,995.60			99,782.94	112,653.46
Southern Pacific Company, Carlin Plant.....		(c)		(c)	4,670.94	2,521.89
Southern Pacific Company, Inlay Plant.....					997.03	1,196.45
Southern Pacific Company, Mina Plant.....					2,613.08	(*) 350.68
Southern Pacific Company, Montello Plant.....					83,231.44	108,700.44
Truckee River General Electric Company.....	16,689.87	19,860.98			2,819.13	3,193.87
Verdi Lumber Company.....	1,626.70	1,741.70	4,500.00	4,500.00	22,176.15	28,467.25
Winnemucca Water and Light Company.....						
Carson City Coal Gas Company.....	252.44	264.76			3,981.09	4,427.68
Las Vegas Gas Company.....	84.06				7,712.74	9,369.65
Nevada Gas Company.....	429.50	616.93			18,538.23	24,660.94
Reno Power, Light and Water Company.....	(c)	(c)			31,446.36	39,460.21
Totals	\$69,780.47	\$106,727.91	\$92,325.05	\$88,416.16	\$996,522.64	\$1,098,597.25

*Includes \$725.05 in 1916 and \$648.91 in 1917, suspense accounts charged to profit and loss.

bIncludes \$151.55 uncollectible accounts.

cService discontinued in 1917.

dIncludes \$72 licenses.

eSee electrical report.

ELECTRIC AND GAS UTILITIES
INCOME ACCOUNT

Company	Net operating revenue or deficit		Nonoperating revenues		Gross corporate income or deficit	
	1916	1917	1916	1917	1916	1917
Canyon Power Company.....	\$1,829.06	\$4,457.60	\$264.00	\$255.50	\$2,093.06	\$4,713.10
City of Fallon Electric System.....	6,395.11	5,183.96	45.15	954.96	5,440.96	6,138.91
Consolidated Power and Telephone Company.....	6,063.97	3,899.14	20.86	1,776.00	6,074.83	5,641.14
Douglas Milling and Power Company.....	886.53	1,715.35			886.53	1,715.35
Elko Lamoille Power Company.....	17,226.99	16,311.92			17,226.99	16,311.92
Ely Light and Power Company.....	2,651.42	4,151.16	174.39	601.56	2,825.81	4,752.72
Las Vegas Land and Water Company.....	229.31	1,222.81			229.31	1,222.81
Linville, R. (Wonder).....	27.12	174.35	23.11	12.00	50.23	186.35
Lovejoy & Woolley Light and Power Company.....	1,914.66	507.24			1,914.66	607.24
Mason Water, Light and Power Company.....	96.19	551.49			96.19	551.49
Nevada-California Power Company.....	347,776.22	293,837.24	242,050.22	302,741.20	589,826.44	596,678.44
Nevada Consolidated Copper Company.....	768.47	2,043.70			768.47	2,043.70
Nevada Valleys Power Company.....	21,134.65	36,039.14	2,611.04	3,660.79	23,745.69	39,719.93
Pacific Power Corporation.....	67,234.95	4,968.60	1,074.32	2,827.69	68,309.27	43,026.29
Reno Power, Light and Water Company.....	95,701.94	98,579.04	8,664.06	4,581.07	104,365.99	103,160.11
Southern Pacific Company, Carlin Plant.....	1,473.43	1,218.09			1,473.43	1,218.09
Southern Pacific Company, Inlay Plant.....	514.86	(b)		(b)	514.86	(b)
Southern Pacific Company, Mina Plant.....	1,344.58	86.49			1,344.58	86.49
Southern Pacific Company, Montello Plant.....	1,576.39	180,669.83			1,576.39	180,669.82
Truckee River General Electric Company.....	127,570.38	172.41	7,140.79	9,759.99	134,711.17	172,410.42
Vend Lumbee Company.....	174.96	11,846.55	7.49	76.13	172.47	11,922.96
Whinnemucca Water and Light Company.....	6,856.38				6,856.38	
Carson City Coal Gas Company.....	1,440.41	1,248.15	14.13	15.74	1,426.28	1,263.89
Las Vegas Gas Company.....	173.57	4,180.49			173.57	4,180.49
Nevada Gas Company.....	1,802.72	1,432.13	273.11	97.43	2,075.83	1,529.56
Reno Power, Light and Water Company.....	29,083.72	29,940.61	61.64	714.31	29,145.36	29,254.90
Totals.....	\$730,393.30	\$675,562.20	\$592,426.67	\$326,164.24	\$1,095,149.75	\$1,062,647.86

* Reported for first three months of 1917 only, then sold to Nevada-California Power Company.

b Services discontinued in 1917.

c Includes \$102,389.78 net earnings of gas and water departments.

d Includes \$30,891.42 net earnings of gas and water departments.

Italic figures denote deficit.

**ELECTRIC AND GAS UTILITIES
INCOME ACCOUNT**

Company	Interest on funded debt		Interest on floating debt		Contractual sinking fund	
	1916	1917	1916	1917	1916	1917
Canyon Power Company						
City of Fallon Electric System	\$800.00	\$800.00	\$1,689.41	\$794.80		
Consolidated Power and Telephone Company						
Douglas Milling and Power Company			3,071.61	3,445.85	\$200.00	\$1,600.00
Elko Lamolite Power Company					\$4,642.19	\$5,771.10
Ely Light and Power Company						
Las Vegas Land and Water Company			310.46	385.42		
Linville R. (Wonder)						
Lovelock & Woolsey Light and Power Company			85.00	10.88		
Mason Water Light and Power Company						
Nevada-California Power Company					61,765.36	64,042.04
Nevada Consolidated Copper Company	239,479.82	327,601.14	28,126.29	1,241.64		
Nevada Valleys Power Company						
Pacific Power Corporation			14,087.86	15,622.97		
Reno Power, Light and Water Company	56,100.00	614,025.00	973.70	29,283.24		
Southern Pacific Company, Carlin Plant	37,566.33	37,407.33	14,316.44	13,891.64	18,468.67	18,982.67
Southern Pacific Company, Inlay Plant						
Southern Pacific Company, Mina Plant						
Truckee River General Electric Company						
Verdi Lumber Company						
Winnemucca Water and Light Company	900.00	900.00	59,174.33	58,017.70		
Carson City Coal Gas Company			900.00	900.00		
Las Vegas Gas Company			1,027.76	1,026.80		
Nevada Gas Company			10.08			\$254.66
Reno Power, Light and Water Company	2,100.00	2,100.00	469.26	133.14		
Totals	\$337,096.15	\$382,933.47	\$154,142.17	\$125,633.48	\$85,066.22	\$30,660.47

^aOther interest.

^bReported for first three months in 1917 only, then sold to Nevada-California Power Company.

ELECTRIC AND GAS UTILITIES
INCOME ACCOUNT

Company	Other deductions from gross corporate income		Net corporate income or deficit		Dividends declared	
	1916	1917	1916	1917	1916	1917
Canyon Power Company.....			\$433.64	\$3,913.30		
City of Fallon Electric System.....		\$42.11	4,540.36	6,196.90		
Consolidated Power and Telephone Company.....			3,003.23	2,196.79	\$1,200.00	\$900.00
Douglas Milling and Power Company.....			698.53	116.35		
Elko Lamolle Power Company.....			10,384.99	9,229.97		
Ely Light and Power Company.....	\$1,999.81	1,310.85	2,515.35	4,967.30		
Las Vegas Land and Water Company.....			232.21	1,222.81		
Linville, R. (Wonder).....			15.23	176.47		
Lovelock & Woolsey Light and Power Company.....			1,914.06	507.24		
Mason Water, Light and Power Company.....			94.19	551.49		
Nevada-California Power Company.....			239,943.67	201,806.33	200,000.00	250,000.00
Nevada Consolidated Copper Company.....	621.30	1,987.39	763.47	2,094.70		
Nevada Valleys Power Company.....			9,667.85	24,196.96		
Pacific Power Corporation.....			11,229.08	13,867.26		
Reno Power, Light and Water Company.....	67.14		136,444.95	109,069.89	100,000.00	100,000.00
Southern Pacific Company, Carlin Plant.....			1,472.13	1,316.03		
Southern Pacific Company, Imlay Plant.....			514.26	710.45		
Southern Pacific Company, Mina Plant.....			1,444.53	(b)		
Southern Pacific Company, Montello Plant.....			272.29	28.23		
Truckee River General Electric Company.....			45,686.94	101,612.22		60,000.00
Verdi Lumber Company.....			474.09	473.24		
Winnemucca Water and Light Company.....			5,063.57	10,122.93	5,000.00	7,500.00
Carson City Coal Gas Company.....			393.52	335.00		
Las Vegas Gas Company.....			452.43	2,265.14		
Nevada Gas Company.....	164.30	713.59	537.73	4,644.73		
Reno Power, Light and Water Company.....			29,146.96	29,225.80		
Totals.....	\$2,752.55	\$4,064.24	\$316,152.66	\$476,366.20	\$306,200.00	\$418,100.00

^aReported for first three months of 1917 only, then sold to Nevada-California Power Company.^bService discontinued in 1917.*Italic figures denote deficit.*

ELECTRIC AND GAS UTILITIES
INCOME ACCOUNT

Company	Other deductions from net corporate income		Surplus or deficit for year		Total surplus or deficit at close of year	
	1916	1917	1916	1917	1916	1917
Canyon Power Company			2453.64	\$3,913.30	\$1,150.01	\$5,068.81
City of Fallon Electric System			2,657.98	2,524.56	5,329.56	1,592.33
Consolidated Power and Telephone Company	\$1,862.56	\$2,771.22	1,862.56	1,862.56	1,862.56	1,595.79
Douglas Mills Power Company			1,263.22	1,115.12	1,488.21	(a)
Elko-Lamelle Power Company			10,681.53	9,329.87	(a)	1,804.56
Ely Light and Power Company			2,515.36	4,329.30	24,989.88	23,362.35
Las Vegas Land and Water Company			424.21	1,367.30	2,842.29	4,165.12
Linville R. (Wonder)			115.23	176.47	(a)	109.54
Lovelock & Woolsey Light and Power Company			1,911.66	537.24	65.43	(a)
Mason Water, Light and Power Company			84.14	551.49	107.69	1,273,968.32
Nevada-California Power Company			59,943.67	43,194.67	1,235,331.33	(a)
Nevada Consolidated Copper Company			763.47	2,084.70	3,557.83	27,668.69
Nevada Valley Power Company			9,657.83	24,196.98	240.06	513,082.69
Pacific Power Corporation			11,229.08	13,891.86	571,047.34	586,122.38
Reno Power, Light and Water Company	7,379.44		29,064.82	1,816.03	(a)	(a)
Southern Pacific Company, Carlin Plant			1,472.43	710.45	(a)	(a)
Southern Pacific Company, Inlay Plant			514.86	(b)	(a)	(a)
Southern Pacific Company, Mina Plant			1,244.53	26.43	(a)	(a)
Southern Pacific Company, Montello Plant			574.29	41,612.22	435,064.46	478,254.43
Truckee River General Electric Company	3,680.20		41,856.64	474.04	(a)	(a)
Verdi Lumber Company			474.04	474.24	2,018.56	1,744.16
Winnemucca Water and Light Company	4,280.80	1,125.80	4,316.93	1,497.13	(a)	(a)
Carson City Coal Gas Company			396.52	335.09	533.58	888.67
Las Vegas Gas Company			442.62	2,365.14	(a)	(a)
Nevada Gas Company			557.73	4,624.73	1,681.47	2,872.61
Reno Power, Light and Water Company			29,145.36	23,226.80	29,145.36	29,226.80
Totals	\$17,193.02	\$3,597.02	\$192,769.64	\$54,869.18	\$2,355,182.69	\$2,415,686.79

*Not shown in reports.

b-Service discontinued in 1917.

c-Reported for first three months of 1917 only, then sold to Nevada-California Power Company.
Italic figures denote deficit.

ELECTRIC AND GAS UTILITIES
OPERATING EXPENSES

Company	Power expense*		Transmission and transformation expenses		Distribution expense	
	1916	1917	1916	1917	1916	1917
Canyon Power Company	\$81,983.07	\$23,651.50	\$514.26	\$386.30	\$203.76	\$328.09
City of Fallon Electric System	5,377.96	6,010.76			914.38	1,332.87
Consolidated Power and Telephone Company	5,609.62	7,782.29			901.09	1,034.05
Douglas Milling and Power Company	501.88	889.54				
Elko Lamoille Power Company	10,518.64	11,258.11	85.67	46.00	3,483.82	54,886.41
Ely Light and Power Company	25,659.75	30,250.97			2,600.63	4,500.78
Las Vegas Land and Water Company	2,009.30	3,045.35			119.70	149.86
Linville, R. (Wonder)	368.80	448.00				
Lovelock & Woolsey Light and Power Company	3,883.32	3,629.16	\$5,776.90	\$6,728.15	1,009.53	450.00
Mason Water, Light and Power Company	1,279.40	2,066.80			16,054.46	1,372.80
Nevada-California Power Company	155,156.09	218,164.90	59,294.76	71,047.63	6,588.47	15,969.60
Nevada Consolidated Copper Company	13,189.26	16,623.05			7,673.32	8,023.90
Nevada Valleys Power Company	19,680.83	23,123.22	4,839.25	3,506.74		9,452.94
Pacific Power Corporation	44,204.42	518,622.60	15,548.26	52,888.75		444.39
Reno Power, Light and Water Company	27,024.19	32,211.66	3,067.36	4,630.07	6,496.12	7,621.81
Southern Pacific Company, Carlin Plant	4,570.96	2,621.59				
Southern Pacific Company, Inlay Plant	997.03	1,196.45				
Southern Pacific Company, Mina Plant	2,513.06					
Southern Pacific Company, Montello Plant	835.25	350.63				
Truckee River General Electric Company	19,843.31	29,146.51	7,708.26	17,152.65	5,079.79	8,160.12
Ward Lumber Company	1,500.00	2,221.79				
Winnemucca Water and Light Company	13,663.00	17,878.25			586.92	1,115.11
Carson City Coal Gas Company	2,581.36	2,768.69				
Las Vegas Gas Company	6,749.44	8,344.46			177.60	280.87
Nevada Gas Company	12,196.94	16,808.23			419.26	183.69
Reno Power, Light and Water Company	15,432.22	20,258.37			5,360.16	6,540.97
					5,909.33	7,182.86
Totals	\$417,243.15	\$498,998.39	\$96,649.71	\$105,769.13	\$62,519.08	\$77,905.22

*Production expenses for gas companies shown in this column.

bIncludes \$1,080.96 maintenance expense.

cIncludes labor expense.

dReported for first three months of 1917 only, then sold to Nevada-California Power Company.

eService discontinued in 1917.

ELECTRIC AND GAS UTILITIES
OPERATING EXPENSES

Company	Consumption expenses		Commercial expense		General expense	
	1916	1917	1916	1917	1916	1917
Canyon Power Company					\$242.45	\$82.92
City of Fallon Electric System					1,574.25	1,771.66
Consolidated Power and Telephone Company					2,813.82	5,588.98
Douglas Mill, R. and Power Company						
Elko-Lahalla Power Company	19.70	85.00	\$900.00	\$900.00	3,517.75	3,984.20
Ely Light and Power Company	12.73	430.97			8,644.10	8,898.90
Las Vegas and Water Company	35.08	111.43	144.88	128.12	64.97	64.22
Linville R. (Wonder)					66.78	82.60
Lovelock & Wonder					409.00	265.42
Masada Water, Light and Power Company					348.75	953.25
Nevada Light and Power Company	2,400.46	2,031.90	13,077.08	13,323.84	64,408.66	45,991.89
Nevada-California Power Company					2,107.68	13,519.73
Nevada Consolidated Power Company	155.62	143.21	4,619.02	3,595.77	13,727.19	13,519.73
Nevada Valleys Power Company					5,121.07	43,859.05
Pacific Power Corporation	1,628.27	2,525.25	12,981.60	11,580.79	21,883.08	20,486.57
Reno Power, Light and Water Company						
Southern Pacific Company, Carlin Plant						
Southern Pacific Company, Inlay Plant						
Southern Pacific Company, Mina Plant						
Southern Pacific Company, Montello Plant						
Truckee River General Electric Company	1,086.12	1,908.27	10,906.17	8,923.07	20,338.77	21,788.32
Verdi Lumber Company						
Winnemucca Water and Light Company	.46	315.89	641.75	643.50	954.47	1,753.08
Carson City Coal Gas Company						
Las Vegas Gas Company			188.41	297.08	464.23	545.89
Nevada Gas Company					459.98	899.58
Reno Power, Light and Water Company			4,874.76	5,898.07	549.64	894.35
					4,562.31	5,344.56
Totals	\$5,591.47	\$7,811.67	\$48,313.62	\$45,409.82	\$151,747.64	\$137,285.19

*Reported for first three months of 1917 only, then sold to Nevada-California Power Company.
Italic figures denote deficit.

ELECTRIC AND GAS UTILITIES
OPERATING EXPENSES

Company	Undistributed expenses		Total operating expenses		Ratio of operating expenses to earnings—Per cent	
	1916	1917	1916	1917	1916	1917
Canyon Power Company						
City of Fallon Electric System	\$278.84	\$398.43	\$23,172.38	\$24,847.24	96.32	84.96
Consolidated Power and Telephone Company	49.06	51.18	8,141.67	9,866.96	60.14	64.37
Douglas Milling and Power Company			9,324.53	14,662.27	51.63	71.07
Elko-Jannolls Power Company			3,601.88	363.54	32.08	66.76
Ely Light and Power Company	300.00	529.79	18,825.68	21,606.16	45.00	43.74
Las Vegas Electric and Water Company	649.64	569.58	37,544.29	44,970.90	81.86	81.68
Linville R. (Wooden)			2,373.18	3,498.53	108.27	161.06
Lovelock & Woolsey			1,384.53	1,410.60	98.82	96.31
Mason Water Light and Power Company	900.00	900.00	11,636.71	12,403.62	79.89	88.82
Nevada-California Light and Power Company	1,576.49	46.32	2,637.68	4,527.91	96.56	87.45
Nevada Consolidated Power Company	10,886.36	12,706.96	320,480.86	378,434.72	40.69	48.18
Nevada Valley Power Company			21,879.41	25,520.03	96.13	107.11
Pacific Power Corporation	355.97	437.43	60,842.19	63,559.09	68.82	66.45
Reno Power, Light and Water Company	983.78	432.63	66,887.53	73,829.43	47.88	32.19
Southern Pacific Company, Carlin Plant	1,483.42	1,601.71	73,829.04	90,567.86	17.82	39.03
Southern Pacific Company, Inlay Plant			4,870.88	7,521.89	147.57	206.18
Southern Pacific Company, Mina Plant			2,517.03	(1)	378.78	246.98
Southern Pacific Company, Montello Plant			681.26	950.68	315.18	(b)
Truckee River General Electric Company	1,629.15	1,767.13	66,541.57	88,349.46	322.53	136.65
Verdi Lumber Company	1,319.13	493.08	2,819.13	3,189.87	81.57	80.68
Winnemucca Water and Light Company	346.56	447.72	16,048.43	22,133.55	131.25	117.87
					53.38	54.96
Carson City Coal Gas Company	217.05	270.40	3,628.65	4,182.92	68.18	72.09
Las Vegas Gas Company			7,623.68	9,393.65	105.38	129.44
Nevada Gas Company			18,104.73	24,033.31	98.58	105.33
Reno Power, Light and Water Company	607.14	780.55	31,443.36	39,465.21	51.96	56.89
Totals	\$21,542.90	\$24,562.95	\$303,607.82	\$397,782.27	46.54	50.74

*Reported for first three months of 1917 only, then sold to Nevada-California Power Company.

bService discontinued in 1917.

**ELECTRIC AND GAS UTILITIES
TOTAL COST OF PLANT AND EQUIPMENT**

Company	Cost at beginning of year		Additions during year		Cost at close of year	
	1916	1917	1916	1917	1916	1917
Canyon Power Company.....	\$1,011,620.26	\$1,013,173.61	\$1,553.35	\$1,250.60	\$1,013,173.61	\$1,014,424.21
City of Fallon Electric System.....	23,430.90	25,253.48	1,852.58	4,139.91	25,253.48	29,413.39
Consolidated Power and Telephone Company.....	21,192.53	21,628.11	835.58	2,687.24	21,628.11	18,940.87
Douglas Milling and Power Company.....	17,193.25	17,193.25		27,242.08	17,193.25	44,435.33
Elko Lamolle Power Company.....	140,372.18	139,987.66	2,858.67	3,727.22	139,987.66	143,714.88
Ely Light and Power Company.....	247,082.09	249,940.76		14,957.42	249,940.76	254,893.34
Las Vegas Land and Water Company.....	2,144.14	2,141.53	2.61	32.06	2,141.53	2,173.69
Linville, R. (Wonder).....	1,043.19	1,383.91	340.72		1,383.91	1,383.91
Lovelock & Woolsey Light and Power Company.....	51,377.55	62,177.55	100.00		62,177.55	62,177.55
Mason Water, Light and Power Company.....	3,900.00	3,900.00			3,900.00	3,900.00
Nevada-California Power Company.....	8,321,505.69	8,290,576.50	50,929.19	1,682,659.36	8,290,576.50	9,963,236.86
Nevada Consolidated Copper Company.....						
Nevada Valleys Power Company.....	2,682,757.04	2,715,538.11	22,781.07	38,307.25	2,715,538.11	2,753,845.37
Pacific Power Corporation.....	2,236,696.40	2,407,533.06	170,896.66	20,198.77	2,407,533.06	2,427,731.82
Reno Power, Light and Water Company.....	2,335,642.40	2,346,531.44	10,889.04	27,673.37	2,346,531.44	2,374,204.81
Southern Pacific Company, Carlin Plant.....						
Southern Pacific Company, Imay Plant.....						
Southern Pacific Company, Mina Plant.....						
Southern Pacific Company, Montello Plant.....						
Truckee River General Electric Company.....						
Vent Lumber Company.....						
Winnemucca Water and Light Company.....	10,540,229.41	10,568,575.59	28,346.18	15,014.06	10,568,575.59	10,583,589.65
	107,027.13	111,307.93	4,230.80	675.80	111,307.93	111,983.73
Carson City Coal Gas Company.....	61,775.41	61,750.27	25.14	90.90	61,750.27	61,841.17
Las Vegas Gas Company.....	25,000.00	29,432.35	4,432.35	1,549.96	29,432.35	30,982.30
Nevada Gas Company.....	177,178.27	178,396.44	1,021.17	688.35	178,396.44	178,987.79
Reno Power, Light and Water Company.....	10,374.51	14,813.44	4,443.93	6,763.67	14,813.44	21,572.11
Totals	\$28,028,042.45	\$28,250,972.98	\$222,830.53	\$1,682,298.70	\$28,250,972.98	\$29,943,271.68

Italic figures denote deficit.

ELECTRIC AND GAS UTILITIES
CAPITAL STOCK AND FUNDED DEBT OUTSTANDING

Company	Total par value of capital stock outstanding		Total par value of all debt outstanding		Total par value of capital stock and debt outstanding	
	1916	1917	1916	1917	1916	1917
Canyon Power Company	\$10,000.00	\$10,000.00			\$10,000.00	\$10,000.00
City of Fallon Electric System				\$15,000.00		15,000.00
Consolidated Power and Telephone Company	100,000.00	100,000.00	\$15,000.00		115,000.00	115,000.00
Douglas Milling and Power Company	27,500.00	50,000.00	50,000.00	50,000.00	77,500.00	100,000.00
Elko Lamoille Power Company	60,000.00	60,000.00	10,000.00	20,000.00	70,000.00	80,000.00
Ely Light and Power Company	200,000.00	200,000.00	60,000.00	55,000.00	260,000.00	255,000.00
Las Vegas Land and Water Company	(*)	(*)				
Linville, R. (Wonder)						
Lovelock & Woolsey Light and Power Company	9,697.50	9,697.50			9,697.50	9,697.50
Mason Water, Light and Power Company	5,000,000.00	5,000,000.00	4,927,000.00	5,987,000.00	9,927,000.00	10,987,000.00
Nevada-California Power Company						
Nevada Consolidated Copper Company						
Nevada Valleys Power Company						
Pacific Power Corporation	3,000,000.00	3,000,000.00			3,000,000.00	3,000,000.00
Reno Power, Light and Water Company	1,000,000.00	1,000,000.00	935,000.00	935,000.00	1,935,000.00	1,935,000.00
Southern Pacific Company, Carlin Plant	1,000,000.00	1,000,000.00	750,000.00	750,000.00	1,750,000.00	1,750,000.00
Southern Pacific Company, Inlay Plant						
Southern Pacific Company, Mina Plant						
Southern Pacific Company, Montello Plant						
Truckee River General Electric Company	3,000,000.00	3,000,000.00			3,000,000.00	3,000,000.00
Verdi Lumber Company						
Winnemucca Water and Light Company	100,000.00	100,000.00	15,000.00	15,000.00	115,000.00	115,000.00
Carson City Coal Gas Company	50,000.00	50,000.00			50,000.00	50,000.00
Las Vegas Gas Company	25,000.00	25,000.00	25,000.00	25,000.00	50,000.00	50,000.00
Nevada Gas Company	150,000.00	150,000.00	30,000.00	30,000.00	180,000.00	180,000.00
Reno Power, Light and Water Company ^b						
Totals	\$13,732,197.50	\$13,754,697.50	\$6,817,000.00	\$7,832,000.00	\$20,549,197.50	\$21,586,697.50

^aThe entire capital stock of this company was exchanged for lands that carried nothing of value pertaining to electric utility.^bSee electric report.

ELECTRIC AND GAS UTILITIES
COMMERCIAL CONSUMERS AND POWER GENERATED

Company	Total number of lighting consumers		Total number of power consumers		Total number of consumers		Number of consumers on meter basis		Total number of KWH generated by all methods ^a	
	1916	1917	1916	1917	1916	1917	1916	1917	1916	1917
Canyon Power Company	377	384	4	4	4	4	4	4	4,173,301	4,973,200
City of Fallon Electric System	332	353	21	25	336	409	383	408	b274,294	b274,294
Consolidated Power and Telephone Company	76	111	11	4	332	357	328	357	b220,854	b220,854
Douglas Milling and Power Company	568	586	42	46	610	641	610	620	c434,220	c373,040
Elko Lamotte Power Company	57	65	1	1	58	66	2	2	d22,410	d54,060
Ely Light and Power Company	38	53	1	1	38	53	38	53	(b)	(b)
Las Vegas Land and Water Company	228	232	1	1	224	233	200	200	b8,680	b11,200
Lovelock & Woolsey Light and Power Company	72	72	1	1	72	72	41	41	59,377,000	62,882,200
Mason Water, Light and Power Company	3,663	4,405	145	118	3,808	4,523	3,808	4,523	1,209,241	1,235,498
Nevada-California Power Company	640	749	33	43	640	749	350	461	(b)	(b)
Nevada Consolidated Copper Company	321	418	7	6	354	461	20	20	d15,713,560	2,383,950
Nevada Valley Power Company	97	52	7	6	104	58	10	10	e3,865,000	11,860,700
Pacific Power Corporation					3,520	3,746	3,517	3,744		
Reno Power, Light and Water Company										
Southern Pacific Company, Carlin Plant										
Southern Pacific Company, Inlay Plant										
Southern Pacific Company, Mina Plant										
Southern Pacific Company, Montello Plant										
Truckee River General Electric Company										
Verdi Lumber Company										
Winnemucca Water and Light Company	405	425	11	13	1,642	1,649	1,631	1,643	26,767,840	32,007,680
Carson City Coal Gas Company					416	443	416	443	583,490	716,510
Las Vegas Gas Company					201	204	201	204	2,386,300	2,768,000
Nevada Gas Company					508	430	508	430	16,009,900	18,538,900
Reno Power, Light and Water Company					1,847	2,084	1,847	2,084	40,454,900	46,199,850
Totals	6,969	7,971	648	278	14,863	16,368	14,001	15,412	e116,292,538	117,492,676
									f68,861,100	67,506,750

^aReported in cubic feet for gas companies.^bPower purchased.^cDoes not include power generated by gas engines during winter.^dIncludes 3,643,160 KWH purchased.^eElectric KWH.^fCubic feet of gas.

WATER COMPANIES POPULATION OF TERRITORY SERVED, AND INCOME ACCOUNT

Company	Population of territory served		Total operating revenues		Total operating expenses	
	1916	1917	1916	1917	1916	1917
Austin Water Company	400	400	\$2,061.20	\$1,980.50	\$804.50	\$1,172.00
Caliente Water System ^a	500	500	1,441.50	1,396.50	1,441.50	1,441.50
Carson Water Company	2,500	2,500	15,593.45	10,870.16	7,312.00	6,881.92
City of Fallon Water System	1,500	1,500	8,384.38	10,095.16	4,389.72	4,881.92
Danahoe Water Works ^b	2,200	2,200	27,727.81	27,712.09	15,415.39	31,424.48
Elko Water Works	3,000	3,500	24,963.40	27,871.81	16,545.08	16,000.81
Elko Water Company	160	160	3,501.30	3,093.00	2,733.92	2,150.00
Elko Electric Company	500	500	3,561.17	3,574.65	2,398.01	2,473.32
Emeralda Water and Milling Company, The	200	200	490.00	1,190.00	1,190.00	2,881.80
Eureka Water Works	4,500	4,500	65,025.76	55,148.88	30,874.08	31,842.98
Goldfield Consolidated Water Company, The	200	200	2,300.55	1,082.70	1,229.58	870.75
Hawthorne Water Works	50	50	1,082.65	1,219.40	1,662.47	2,690.23
Indian Springs Water Company	2,250	2,300	8,779.35	9,080.85	4,314.86	5,490.00
Las Vegas Land and Water Company		c1,500		308.00		900.00
Lochridge, R. C. (Goodsprings) ^a				c1,527.20		c598.96
Lovelock Water System ^a	540	50	51,651.55	3,300.00	1,980.00	4,140.00
Luning Water Works	500	750	1,417.16	1,587.50	1,335.85	1,088.85
Manhattan Water Company	200	200	1,706.35	3,060.60	1,617.01	3,154.53
Mason Water, Light and Power Company	100	100		1,563.00		638.40
Minden Water Plant ^a	500	500	5,394.19	4,344.13	3,042.99	2,898.98
Pioche Water Company	13,500	13,500	106,426.91	103,182.70	32,395.96	51,690.61
Reno Power, Light and Water Company	57	59	688.40	531.50	60.70	23.90
Ruby Hill Water Works	5,000	6,000		4,980.30		7,935.53
Southern Pacific Co. (Carlin, Coble, Lucin, Mina, Montello, Schurz, Wells) ^a	2,250	2,250	13,812.43	16,429.20	11,079.51	12,321.42
Tonopah Sewer and Drainage Company	800	800	53,707.11	45,944.68	41,778.26	39,461.31
Virginia and Gold Hill Water Company			3,231.00	3,423.25	2,189.90	3,187.56
Virginia Ranch Land and Cattle Company				846.00		
Wadsworth Light and Power Company ^a	5,000	5,000	99,312.68	104,196.76	44,607.16	51,731.28
Water Company of Tonopah	2,500	2,500	18,428.08	18,178.70	5,325.60	9,394.31
Winnemucca Water and Light Company			4,442.35		4,209.47	
Wonder Water Company				4,414.85		
Yerington Water Works ^a						
Totals	48,427	53,184	\$472,648.13	\$478,547.60	\$237,910.94	\$303,089.15

Gold Circle and Wonder Water Companies have not reported for 1917.

^aNot reporting in 1916.

^bReport from October 1 to December 31, 1917, only.

^cReport for year ended June 30, 1917.

^dReport for nine months only. Sold October 1, 1917.

WATER COMPANIES
INCOME ACCOUNT

Company	Taxes paid		Total operating expenses and taxes		Net operating revenue or deficit	
	1916	1917	1916	1917	1916	1917
Austin Water Company	\$211.15	\$403.65	\$1,015.65	\$1,575.65	\$1,065.55	\$404.85
Caliente Water Company ^a				1,441.50		55.00
Carson Water Company	2,760.63	2,712.54	10,817.63	11,333.56	4,775.92	3,967.39
City of Fallon Water System			4,389.72	4,981.82	3,984.66	5,132.34
Dayton Water Works ^a				775.10		6,636.90
Elko Water Works	1,514.25	1,915.53	16,930.15	18,041.01	10,797.63	13,869.43
Ely Water Company	2,241.07	2,824.50	18,790.15	18,825.31	6,173.25	9,046.50
Emerald Water and Milling Company, The	269.03	40.87	4,597.42	2,190.87	829.13	
Esmeralda Water Works	357.85	454.34	5,127.66	5,127.66	1,496.12	2,394.06
Eureka Water Company	20.25	401.40	2,655.96	2,783.30		791.35
Gold Circle Water Company	2,503.00	2,882.50	33,377.06	34,705.43	31,643.70	20,441.40
Goldfield Consolidated Water Company, The	166.25	94.00	1,395.80	764.75	904.75	297.95
Hawthorne Water Works	106.77	42.34	2,342.39	3,987.77	1,309.74	2,613.37
Indian Springs Water Company	554.12	512.33	55,796.38	59,931.97	2,982.42	2,158.89
Las Vegas Land and Water Company		18.37		183.87		630.37
Lochridge, R. C. (Goodsprings) ^a				583.97		938.24
Lovelock Water System ^a				583.96		852.84
Luning Water Works	12.50	12.84	1,872.50	4,152.84	230.35	317.07
Manhattan Water Company	108.33	131.58	444.78	1,220.43	972.38	202.23
Mason Water, Light and Power Company	136.65	96.30	1,753.66	3,252.83	43.31	268.75
Minden Water Plant ^a		189.50		11,284.25		2,982.42
Pioche Water Company		123.26	3,042.99	3,016.24	2,351.20	1,327.94
Reno Power, Light and Water Company	(m)	(m)	32,385.96	51,590.61	73,040.95	51,562.09
Ruby Hill Water Works	21.00	21.60	81.70	45.50	606.70	496.00
Southern Pacific Co. (Carlin, Coble, Lucin, Mina, Montello, Schurz, Wells) ^a				7,955.83		2,945.23
Tonopah Sewer and Drainage Company	1,349.10	2,208.14	12,428.61	14,530.56	1,393.82	1,896.64
Virginia and Gold Hill Water Company	5,396.45	5,785.35	47,174.71	45,246.66	6,532.40	698.02
Virginia Ranch Land and Cattle Company	64.40	51.30	2,704.30	2,106.85	528.70	314.40
Wadsworth Light and Power Company ^a		76.50		76.50		769.50
Water Company of Tonopah	6,324.00	9,969.96	50,831.16	61,731.24	48,481.42	42,464.52
Winnemucca Water and Light Company	1,712.70	1,741.71	98,737.60	112,232.02	9,690.48	5,896.68
Wonder Water Company	460.48		4,669.95		237.60	
Yerington Water Works ^a				2,732.71		1,682.14
Totals	\$25,280.62	\$32,735.31	\$268,896.96	\$349,145.35	\$203,751.17	\$129,402.15

^aNot reporting in 1916. ^bIncludes \$855 depreciation. ^cIncludes \$1,710 depreciation. ^dIncludes \$150 depreciation. ^eIncludes \$573.15 depreciation. ^fIncludes \$1,134.60 depreciation. ^gIncludes \$327.95 depreciation. ^hIncludes \$925.04 depreciation. ⁱIncludes \$95 depreciation. ^jReported for October, November, and December, 1917, only. ^kReport for June 30, 1916. ^lIncludes \$466.25 depreciation. ^mSee electric report. ⁿIncludes \$500 depreciation. ^oIncludes \$360 depreciation. ^pIncludes \$1,100 depreciation and \$699.30 maintenance of water rights, etc. ^qIncludes \$1,100 depreciation and \$56 for licenses. ^rIncludes \$7,500 depreciation. ^sItalic figures denote deficit.

WATER COMPANIES
INCOME ACCOUNT

Company	Nonoperating revenues		Gross corporate income or loss		Interest on funded debt	
	1916	1917	1916	1917	1916	1917
Austin Water Company			\$1,065.55	\$404.85		
Caliente Water System ^a			5,214.34	55.00		
Carson Water Company	453.52	453.65	6,154.66	7,134.34	\$825.00	\$1,110.00
City of Fallon Water System	2,300.00	2,062.00			2,130.00	2,185.00
Dayton Water Works ^a				636.90		
Elko Water Works			10,797.53	13,269.93		
Ely Water Company	2,130.00	2,180.00	8,303.25	11,236.50	15,300.00	15,300.00
Emrick, L. F. (Searchlight) ^a				11,829.13		
Esmeralda Water and Milling Company, The			739.07	2,189.03		
Eureka Water Works	614.05	264.98	905.31	791.35		
Gold Circle Water Company ¹			129.75			
Goldfield Consolidated Water Company, The			31,648.70	20,441.40	14,100.00	13,830.00
Hawthorne Water Works			904.75	297.95		
Indian Springs Water Company		200.00	1,302.74	2,443.37		
Las Vegas Land and Water Company		7.13	2,989.64	2,166.06		
Lochridge, R. C. (Goodsprings) ^a	7.23			630.87		
Lovelock Water Systems ^a				938.24		\$1,650.00
Luning Water Works ^b			320.55	353.64		
Manhattan Water Company			972.83	317.07		
Mason Water, Light and Power Company			43.31	268.75		
Minden Water Plant ^a				1,327.94		
Pioche Water Company			2,351.30	51,486.00	(c)	(c)
Reno Power, Light and Water Company	203.47	103.53	73,244.42	1,327.94		
Southern Pacific Co. (Carlin, Coble, Lucin, Mina, Montello, Schurz, Wells) ^a			606.70	51,486.00		
Tonopah Sewer and Drainage Company			1,383.52	2,945.23	2,040.00	2,020.00
Virginia and Gold Hill Water Company			6,532.40	696.02		
Virginia Ranch Land and Cattle Company ^d			526.70	314.40		
Wadsworth Light and Power Company ^a				769.50		
Water Company of Tonopah			48,431.42	42,464.52	36,720.00	35,400.00
Winnemucca Water and Light Company	71.25	362.26	9,761.73	6,238.94	900.00	900.00
Wonder Water Company ¹			237.60	1,682.14		
Yerington Water Works ^a						2,160.00
Totals	\$5,664.51	\$5,563.60	\$209,415.08	\$134,965.75	\$72,015.00	\$74,674.00

^aNot reporting in 1916.^bReport for year ending June 30, 1916.^cSee electric report.^dIn 1917 reported for nine months only. Sold October 1, 1917.^eReported for October, November and December, 1917, only.^fNo report filed in 1917.

WATER COMPANIES INCOME ACCOUNT

Company	Other deductions from gross corporate income		Net corporate income or deficit		Dividends paid	
	1916	1917	1916	1917	1916	1917
Austin Water Company			\$1,066.55	\$404.85		
Caliente Water System ^a		\$294.99	4,889.34	340.49		
Carson Water Company			1,223.42	3,331.04	\$3,000.00	\$3,000.00
City of Fallon Water System	\$2,181.24					
Dyer Water Works ^b				636.30		
Elko Water Works	980.00	150.13	9,587.43	13,460.04	8,000.00	
Ely Water Company	434.94	728.67	7,437.69	4,828.13		
Emrick, L. F. (Seachlight) ^a			758.07	2,323.13		
Euirelda Wasserd Milling Company, The			105.31	2,791.85		
Eureka Water Works			173.45			
Gold Circle Water Company ^c	300.00		12,433.06	5,819.19	9,723.34	
Goldfield Consolidated Water Company, The	5,116.64	791.92	12,433.06	297.85		
Hawthorne Water Company			1,904.76	2,143.87		
Indian Springs Water Company			1,809.74	2,143.87		
Las Vegas Land and Water Company			2,889.64	2,143.87		
Lochridge, R. C. (Good Springs) ^a				2,143.87		
Lovelock Water System ^a				2,143.87		
Luning Water Works		\$1,125.00		\$1,836.74		
Manhattan Water Company			230.94	859.54		
Mason Water, Light and Power Company			973.38	317.07		
Minden Water Plant ^a			45.31	502.53		
Pioche Water Company				268.75		
Reno Power, Light and Water Company			2,351.20	1,327.94		(c)
Ruby Hill Water Works			78,244.42	51,665.62		
Southern Pacific Co. (Carlin, Coble, Lucine, Mina, Montello, Schurz Wells) ^a		(c)	666.70	2,915.53		
Tonopah Sewer and Drainage Company	876.00	856.14	1,037.13	977.50		
Virginia and Gold Hill Water Company			6,532.40	698.02	6,250.00	1,250.00
Virginia Ranch Land and Cattle Company ^d			526.70	314.40		
Wadsworth Light and Power Company ^a				769.50		
Water Company of Tonopah	\$7,000.00	38,000.00	\$5,432.53	30,235.13		
Winnemucca Water and Light Company			8,961.73	5,338.94	5,000.00	7,500.00
Wonder Water Company ^d	9.13		236.73			
Yerington Water Works		12.00		1,477.88		
Totals	\$47,025.95	\$45,362.80	\$80,374.73	\$14,923.95	\$31,973.34	\$11,750.00

^aNot reporting in 1916.^bReported for year ending June 30, 1916.^cSee electric report.^dReported for nine months only. Sold October 1, 1917.^eReported for October, November and December, 1917, only.^fNo report filed in 1917.

WATER COMPANIES
INCOME ACCOUNT

Company	Other deductions from net corporate income		Surplus or deficit for year		Total surplus or deficit at close of year	
	1916	1917	1916	1917	1916	1917
Austin Water Company			\$1,065.55	\$404.85		
Caliente Water System ^a				553.89		
Carson Water Company	\$7,486.23	\$238.10	6,105.89	92.94		
City of Fallon Water System	1,750.21	2,064.06	586.79	709.23	\$1,190.21	
Dayton Water Works ^a				638.90		
Elko Water Works			1,887.63	13,450.06		
Ely Water Company			7,431.69	4,805.17		
Emrick, L. F. (Searchlight) ^a			782.07	853.13	62,132.92	\$63,600.24
Esmeralda Water and Milling Company, The			905.31	2,139.08	55,694.52	55,823.60
Eureka Water Works			170.25	791.35		
Gold Circle Water Company			2,709.72	5,819.48	79,230.27	69,018.79
Goldfield Consolidated Water Company, The			170.25	297.95		
Hawthorne Water Works			904.75	2,443.37	20,042.13	22,897.75
Indian Springs Water Company			1,809.74	2,106.06	1,749.49	4,187.67
Las Vegas Land and Water Company			2,989.64	690.87		
Lochridge, R. C. (Goodsprings) ^a				61,836.76		
Lovelock Water System ^a				852.84		
Luning Water Works ^a			\$20.85	317.07		
Manhattan Water Company			972.88	202.23	67,621.10	68,890.50
Mason Water, Light and Power Company			43.37	288.75		
Minden Water Plant ^a				1,327.94		
Pioche Water Company			2,351.20	61,665.62	(c)	8,257.77
Reno Power, Light and Water Company			73,244.42	486.00		
Ruby Hill Water Works			606.70	2,945.23		
Southern Pacific Co. (Carlin, Coble, Lucin, Mina, Montello, Schurz, Wells) ^a			1,037.18	977.50	8,582.74	7,605.24
Tonopah Sewer and Drainage Company			282.40	551.98		
Virginia and Gold Hill Water Company ¹			586.70	314.40		
Virginia Ranch Land and Cattle Company ¹				789.50		
Wadsworth Light and Power Company ^a				30,935.43	72,132.78	103,369.86
Water Company of Tonopah			25,223.53	2,960.01	4,826.06	1,144.27
Winnemucca Water and Light Company	79.65	796.95	3,762.09		10,222.46	
Wonder Water Company ¹			\$36.73	1,677.86		
Yerington Water Works ^a						
Totals	\$9,325.09	\$5,091.11	\$49,076.80	\$87.84	\$95,835.94	\$186,436.71

^aNot reporting in 1916.¹Includes earnings from lighting system.^cSee electric report.^dReported for October, November, December, 1917, only.^eReport for year ended June 30, 1918.^fReported for nine months only in 1917.

Sold October 1, 1917.

Italic figures denote deficit.

WATER COMPANIES OPERATING EXPENSES

Company	Pumping expenses		Distribution expenses		Commercial expenses	
	1916	1917	1916	1917	1916	1917
Austin Water Company	\$34.00	\$30.00	\$136.50	\$640.25		\$149.20
Caliente Water System ^a		1,200.00		92.30		96.00
Carson Water Company	1,325.00	325.00	2,179.08	2,896.88	\$36.00	
City of Fallon Water System	2,000.82	1,888.36	761.71	1,294.38		
Dayton Water Works ^b	600.00			168.00		
Elko Water Works	959.18	3,959.06	6,380.70	17,922.76		361.45
Ely Water Company			6,898.22	6,570.36		450.00
Emrick, L. F. (Searchlight) ^a			2,629.87	1,200.00		
Esmeralda Water and Milling Company, The			2,298.01	3,473.32		
Eureka Water Works				2,381.90		
Goldfield Consolidated Water Company, The	9,894.92	10,713.49	6,493.78	6,894.71	\$60.19	635.81
Hawthorne Water Company	87.10	23.60	273.38	65.75	51.00	5.00
Indian Springs Water Company	1,635.00	2,400.00	302.32	490.66	1,140.73	1,062.70
Las Vegas Land and Water Company		900.00		890.96		
Lochridge, R. C. (Goodsprings) ^a						
Lovelock Water System ^c	1,440.00	3,840.00		558.96		
Manning Water Works ^c				300.00		
Manhattan Water Company			325.85	1,078.86		
Mason Water, Light and Power Company	150.00	2,129.42	1,118.26			25.55
Minden Water Plant ^a		968.40				120.00
Pioche Water Company	585.80	222.80	1,885.06	1,453.04	502.20	680.00
Reno P. W. Light and Water Company			18,020.12	31,886.04	2,137.46	3,971.96
Ruby Hill Water Works			60.70	23.30		
Southern Pacific Co. (Carlin, Coble, Lucin, Mina, Montello, Schurz, Wells) ^a		7,935.53		2,910.22	1,681.38	
Tonopah Sewerage and Drainage Company	1,200.00	1,300.00	25,063.27	23,850.06		
Virginia and Gold Hill Water Company	1,442.40	1,172.90			240.00	180.00
Virginia Ranch Land and Cattle Company ^d						
Wadsworth Light and Power Company ^a						
Water Company of Tonopah	19,091.98	21,544.05	3,704.32	7,998.92	335.30	373.20
Wendover Water and Light Company	2,465.00	5,116.28	4,895.20	1,716.07	641.47	642.06
Wonder Water Company ^a						
Yerington Water Works ^a		2,492.71	4,069.74			240.00
Totals	\$42,234.20	\$67,977.20	\$83,544.29	\$114,568.53	\$7,696.25	\$8,982.92

^aNot reporting in 1916.^bReported for October, November, and December 1917, only.^cReport for year ended June 30, 1916.^dReported for nine months only in 1917; sold October 1, 1917.^eNo report in 1917.

WATER COMPANIES
OPERATING EXPENSES

Company	General expenses		Undistributed expenses		Total operating expenses	
	1916	1917	1916	1917	1916	1917
Austin Water Company	\$634.00	\$601.75			\$804.50	\$1,172.00
Caliente Water System ^a						1,441.50
Carson Water Company	3,516.03	3,583.55	\$85.94	\$60.54	7,212.00	6,981.02
City of Fallon Water System	1,588.46	1,702.80	48.74	51.18	4,389.72	4,931.82
Dayton Water Works ^a						4,785.00
Elko Water Works	8,076.01	9,490.82			15,415.38	31,624.48
Ely Water Company	9,688.30	9,768.56	22.56	670.90	16,549.08	16,000.81
Emerick, L. F. (Searchlight) ^a				500.00		2,150.00
Esmeralda Water and Milling Company, The						4,673.82
Eureka Water Works	2,068.52	1,200.00			4,628.39	2,881.90
Goldfield Water Company ^a	180.00				2,298.01	
Goldfield Consolidated Water Company, The	12,646.10	11,239.23	979.09	2,359.74	30,874.06	31,842.98
Hawthorne Water Works	945.86	605.00	10.31		1,229.55	670.75
Indian Springs Water Company	1,382.49	2,171.07	98.63		1,692.47	2,690.23
Las Vegas Land and Water Company	1,236.81	1,116.32			4,314.86	5,490.00
Lochridge, R. C. (Goodsprings) ^a						900.00
Lovelock Water System ^a						d588.96
Luning Water Works	c420.00				c1,880.00	4,140.00
Manhattan Water Company	10.00	10.00			1,335.85	1,088.85
Mason Water Light and Power Company	348.75	953.25		46.31	1,617.01	3,154.53
Minden Water Plant ^a		75.94		75.00		638.40
Pioche Water Company	655.71					2,893.96
Reno Power, Light and Water Company	11,175.11	14,948.37	466.95	551.94	3,042.99	51,590.61
Ruby Hill Water Works					32,385.96	23.90
Southern Pacific Co. (Carlin, Mina, Montello, Schurz, Wells) ^a					60.70	7,935.53
Tonopah Sewer and Drainage Company	9,448.13	9,411.30			11,079.51	12,321.42
Virginia and Gold Hill Water Company	11,039.94	11,274.56	4,465.05	3,636.70	41,778.26	39,461.31
Virginia Ranch Land and Cattle Company ^b	120.00	90.00	337.50	254.65	2,139.90	1,697.56
Wadsworth Light and Power Company ^a		76.50				76.50
Water Company of Tonopah	21,396.56	23,396.21			44,507.16	51,731.28
Winnemucca Water and Light Company			346.87	447.92	5,825.60	9,394.31
Wonder Water Company ^c	72.93	1,471.99	36.90		4,209.47	
Yerington Water Works ^a						2,732.71
Totals	\$97,552.76	\$102,952.12	\$6,893.44	\$8,654.88	\$237,910.94	\$303,166.65

^aNot reporting in 1916.^bReported for nine months only in 1917. Sold October 1, 1917.^cReport for year ended June 30, 1916.^dReport from October 1 to December 31, 1917, only.^eNo report filed in 1917.

WATER COMPANIES TOTAL COST OF PLANT AND EQUIPMENT

Company	Cost at beginning of year		Additions during year		Cost at close of year	
	1916	1917	1916	1917	1916	1917
Austin Water Company						
Caliente Water System						
Carson Water Company	549,137.94	\$25,608.69	\$6,470.73	\$238.10	\$25,608.69	\$25,846.79
City of Fallon Water System	43,672.60	44,372.69	700.19	2,064.06	44,372.69	46,436.76
Dyersville Water Works ^a						
Elko Water Works	718,613.00	148,954.81		17,147.85	148,954.81	164,102.66
Elko Water Company		718,885.19	272.19	1,406.51	718,885.19	720,296.70
Farlow L. F. (Sanary)	99,997.00	99,997.00			99,997.00	99,997.00
Farlow L. F. (Schlicht) ^a	89,474.58	89,474.58			89,474.58	89,474.58
Esmeralda Water and Milling Company, The						
Eureka Water Works	1,308,395.69	1,268,062.09	10,374.60	14,601.07	1,268,062.09	1,278,481.02
Gold Circle Water Company ^f						
Hawthorne Water Works	199,614.19	199,614.19			199,614.19	199,614.19
Indian Springs Water Company	18,155.99	18,155.99	14.07	18.96	18,155.99	18,173.03
Las Vegas Land and Water Company	18,150.08	1,080.00				1,080.00
Lochridge, R. C. (Goodsprings) ^a						
Lovelock Water System ^a						
Luning Water Works						
Manhattan Water Company	8,808.64	6,172.51	325.85	1,078.85	9,134.69	7,251.35
Mason Water, Light and Power Company	13,800.00	13,800.00			13,800.00	13,800.00
Minden Water Plants ^a		9,823.42		6,802.61		16,128.03
Pioche Water Company						
Reno Power, Light and Water Company	42,063.19	49,389.41	7,256.22	65,207.35	49,389.41	114,546.76
Ruby Hill Water Works						
Southern Pacific Co. (Carlin, Coble, Lucin, Mina, Montello, Schurz, Wells) ^a	81,357.64	84,682.51	3,324.87	717.38	84,682.51	85,399.89
Tonopah Sewer and Drainage Company ^d						
Virginia and Gold Hill Water Company	10,000.00	10,000.00		2,700.00	10,000.00	12,700.00
Virginia Ranch Land and Cattle Company ^e						
Wadsworth Light and Power Company ^a						
Water Company of Tonopah	1,621,705.80	1,607,737.23	9,028.43	2,362.69	1,680,737.23	1,610,099.92
Winnemucca Water and Light Company	61,613.30	61,682.95	79.65	348.95	61,682.95	62,041.90
Wonder Water Company ^f						
Yerington Water Works ^a	745,146.50				745,146.50	
Totals	\$5,076,574.25	\$4,479,903.26	\$17,129.46	\$85,443.32	\$5,240,658.52	\$4,565,846.58

^aNot reporting in 1916.

^bAdditions since January 1, 1916.

^cReport for January, 1916.

^dReport for December, 1915.

^eReport for nine months of 1917 only. Held October 1, 1917.

^fNo report filed in 1917.

^gReport for October, November and December of 1917 only.

^hWater Rates include district

WATER COMPANIES
CAPITAL STOCK, AND FUNDED DEBT OUTSTANDING

Company	Total par value of capital stock outstanding		Total par value of all debt outstanding		Total par value of capital stock and debt outstanding	
	1916	1917	1916	1917	1916	1917
Austin Water Company						
Caliente Water System ^a				\$1,700.00		\$1,700.00
Carson Water Company				18,500.00		118,500.00
City of Fallon Water System	\$100,000.00	\$100,000.00	\$18,500.00	31,000.00	\$118,500.00	118,500.00
Dayton Water Works ^a			35,000.00		35,000.00	31,000.00
Elko Water Works	150,000.00				150,000.00	
Ely Water Company	500,000.00	500,000.00	255,000.00	255,000.00	755,000.00	755,000.00
Emrick, L. F. (Searchlight) ^a						
Esmeralda Water and Milling Company, The	100,000.00	100,000.00			100,000.00	100,000.00
Eureka Water Works						
Gold Circle Water Company ^c	988,996.00	988,996.00	238,000.00	232,000.00	1,226,996.00	1,220,996.00
Goldfield Consolidated Water Company, The						
Hawthorne Water Works	200,000.00	200,000.00			200,000.00	200,000.00
Indian Springs Water Company	50,000.00	50,000.00			50,000.00	50,000.00
Las Vegas Land and Water Company						
Lockridge, R. C. (Goodsprings) ^a						
Lovelock Water System ^a				110,000.00		110,000.00
Luning Water Works ^d						
Manhattan Water Company						
Mason Water, Light and Power Company	9,687.50	9,687.50			9,687.50	9,687.50
Minden Water Plant ^a						
Pioche Water Company						
Reno Power, Light and Water Company ^b						
Ruby Hill Water Works						
Southern Pacific Co. (Carlin, Coble, Lucin, Mina, Montello, Schurz, Wells) ^a	200,000.00	200,000.00	23,000.00	23,000.00	200,000.00	223,000.00
Tonopah Sewer and Drainage Company	1,000,000.00	1,000,000.00			1,000,000.00	1,000,000.00
Virginia and Gold Hill Water Company						
Virginia Ranch Land and Cattle Company ^c						
Wadsworth Light and Power Company						
Water Company of Tonopah	1,000,000.00	1,000,000.00	640,000.00	617,000.00	1,640,000.00	1,617,000.00
Winnemucca Water and Light Company	902,874.00		16,000.00	16,000.00	902,874.00	16,000.00
Wonder Water Company ^c						
Yerington Water Works ^a				38,000.00		38,000.00
Total	\$5,201,567.50	\$4,145,688.50	\$1,224,500.00	\$1,339,200.00	\$6,403,067.50	\$5,487,888.50

^aNot reporting in 1916.^dReport for June 30, 1916.^bSee electric report.^eReport for nine months of 1917 only. Sold October 1, 1917.^cNo report filed in 1917.^fReported for October, November and December of 1917 only.

WATER COMPANIES NUMBER AND CLASSIFICATION OF CONSUMERS

Company	Commercial		Industrial		Public		Total consumers		Increase over preceding year		Decrease over preceding year	
	1916	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916	1917
Austin Water Company												
Caliente Water System	70					15						2
Carson Water Company	451	469				71						
City of Fallon Water System	273	298	20	20	67		536	539	35	4	56	
Dayton Water Works		42						42				
Elko Water Company	467	501	7	9	69	70	563	590	68	17		
Emrick, L. F. (Searchlight)	608	666	9	13	24	25	641	733	188	92		
Emeralda Water and Milling Company, The												
Esmeralda Water Works					1	1		2	1			1
Eureka Water Works	53	48	19	20	2	2	74	70				4
Gold Circle Water Company												
Goldfield Consolidated Water Company, The												
Indian Springs Water Company	498	471	30	28	57	53	586	552			18	33
Las Vegas Land and Water Company	50	50	5	2	10	10	65	62			2	3
Lochridge, R. C. (Goodsprings)	380	380	2	2	7	8	389	400	17	1	8	
Lovelock Water System												
Luning Water Works	192			8		38		238				
Manhattan Water Company	80						40	50		10		
Mason Water, Light and Power Company	122	163	7	8	2	3	131	170		39		
Minden Water Plant	48	30	3	3	17	15	68	95	13			
Pioche Water Company	98				2	22		17				
Reno Hill Water and Water Company	104	98	7	8	13	13	113	128		15	35	
Reno Hill Water Works	3,299	3,457	35	35	1	1	3,347	3,467	177	110		
Southern Pac. Co. (Coburn, Coburn, Lucin, Mina, Montello, Schurz, Wells)	8		1	2			10	11		1	3	
Tonopah Sed and Drainage Company	207	15	15	20	7	6	217	293	6	16		
Virginia Ranch Land and Cattle Company	598	495	24	29	98	96	640	619				28
Wadsworth Light and Power Company	72	27	12	3	14	14	98	98				9
Water Company of Tonopah	1,003	1,085	10	10	49	54	1,020	1,149	127	87		
Winnemucca Water and Light Company	413	417	8	8	50	51	471	476				
Yerington Water Works	40					2	40	188	6	14		
Totals	8,651	9,545	240	300	579	648	9,476	10,394	544	434	122	40

*Includes all classes of consumers.

DIRECTORS AND OFFICERS OF ELECTRIC, GAS, AND WATER UTILITIES**ELECTRIC UTILITIES****Canyon Power Company**

Directors—H. A. Mosher, L. M. Gove, F. C. Martens, J. E. Bowes, H. L. Breed, all of Oakland, Cal.

Officers—President, H. A. Mosher; Vice-President, L. M. Gove; Secretary and Treasurer, F. C. Martens, all of Oakland, Cal.

City of Fallon Electric System

Directors—E. S. Berney, Mayor; J. D. Austin, J. C. Jones, Joe Jarvis, Councilmen; Johnston Price, City Clerk, C. J. Sutherland, City Engineer, all of Fallon, Nevada.

Officers—City officials as above; John Schneider, City Treasurer, and E. E. Winters, City Attorney, Fallon, Nevada.

Consolidated Power and Telephone Company

Directors—E. W. Clark, J. S. Park, W. S. Park, Las Vegas, Nevada.

Officers—President, Ed. W. Clark; Secretary and Treasurer, Jno. S. Park, Las Vegas, Nevada.

Douglas Milling and Power Company

Directors—Leo Springmeyer, F. W. Sarman, Chris Neddenriep, M. Jacobsen, H. G. Anderson, all of Gardnerville, Nevada.

Officers—President, Leo Springmeyer; Vice-President, F. W. Sarman; Secretary, Chris Neddenriep; Treasurer, M. Jacobsen, all of Gardnerville, Nevada.

Elko Lamolle Power Company

Directors—L. J. Wintermantel, H. S. Taber, B. G. McBride, Webster Patterson, Frank Fernald, Sr., all of Elko; J. G. Scrugham, Reno, Nevada.

Officers—President, L. J. Wintermantel; Vice-President, F. Fernald, Sr.; Resident Agent and Treasurer, H. S. Taber; Manager, B. G. McBride, all of Elko, Nevada.

Ely Light and Power Company

Directors—Frank W. Holmes, Mt. Vernon, N. Y.; H. A. Gray, New York City; Arthur Smith, East Ely, Nevada; H. E. Dodge, Henry F. J. Knobloch, Bayonne, N. J.

Officers—President, Frank W. Holmes, Mt. Vernon, N. Y.; Vice-President, H. A. Gray, New York City; Secretary and Assistant Treasurer, Henry F. J. Knobloch, Bayonne, N. J.; Second Vice-President and Manager, Arthur Smith, East Ely, Nevada.

Las Vegas Land and Water Company

For directors and officers see water report.

Electric Service, Wonder, Nevada

Sole ownership—R. Linville, Wonder, Nevada.

Lovelock and Wolsey Light and Power Company

Sole ownership—S. H. Young and C. L. Young, Lovelock, Nevada.

Lovelock and Woolsey Light and Power Company

For directors and officers see water report.

The Nevada-California Power Company

Directors—W. E. Porter, L. C. Phipps, G. S. Wood, Denver, Colo.; A. B. West, Riverside, Cal.; E. S. Kassler, Lawrence C. Phipps, Jr., Geo. E. Cranmer, Denver, Colo.

Officers—President, W. E. Porter, Denver, Colo.; Vice-Presidents, G. S. Wood, Denver, Colo.; A. B. West, Riverside, Cal.; L. C. Phipps, Jr., Denver, Colo.; Secretary, W. S. Fisher, Denver, Colo.; Treasurer, L. C. Phipps, Jr., Denver, Colo.

Nevada Consolidated Copper Company

Directors—D. C. Jackling, C. M. MacNeill, San Francisco, Cal.; W. C. Potter, H. O. Havemeyer, C. K. Lipman, Wm. P. Hamilton, Stephen Birch, W. E. Bennett, W. B. Thompson, all of New York City; W. Hinckle Smith, Philadelphia, Pa.; C. B. Lakenan, McGill, Nevada.

Officers—President, D. C. Jackling, San Francisco, Cal.; Secretary, W. E. Bennett, New York City; Treasurer, Chas. K. Lipman, New York City.

Nevada Valleys Power Company

Directors—Edson F. Adams, J. Q. Brown, F. J. Earley, Oakland, Cal.; H. P. Danforth, Reno, Nevada; Joe Beane, Lovelock, Nevada.

Officers—President, Edson F. Adams; Vice-President, J. Q. Brown; Secretary and Treasurer, F. J. Early, Oakland, Cal.

Pacific Power Corporation

Directors—C. O. Poole, A. B. West, I. B. Potter, W. N. Chatfield, C. C. Horgan, all of Riverside, Cal.

Officers—President, C. O. Poole; Vice-President, A. B. West; Secretary and Assistant Treasurer, W. N. Chatfield; Assistant Secretary, J. B. Thieme; Treasurer, A. S. Cooper, all of Riverside, Cal.

Reno Power, Light and Water Company

Directors—Frederick S. Pratt, Boston, Mass.; Hugh Goodfellow, W. H. Orrick, A. S. Humphrey, H. L. Lanfar, C. F. Shaw, L. M. Reinche, San Francisco, Cal.

Officers—President, Hugh Goodfellow; Vice-President, W. H. Orrick; Secretary, H. L. Lanfar, San Francisco, Cal; Manager, G. A. Campbell, Reno, Nevada; Treasurer, H. B. Sawyer, Boston, Mass.; Assistant Treasurer, W. E. Shaw, Jr., Reno, Nevada; Vice-President, F. S. Pratt, Boston, Mass.

Southern Pacific Company (Carlin, Nevada)

Directors and Officers—Same as Southern Pacific Company, railroad report.

Southern Pacific Company (Imlay)

Directors and Officers—Same as Southern Pacific Company, railroad report.

Southern Pacific Company (Mina)

Directors and Officers—Same as Southern Pacific Company, railroad report.

Southern Pacific Company (Montello)

Directors and Officers—Same as Southern Pacific Company, railroad report.

The Truckee River General Electric Company

Directors—Frederick S. Pratt, West Newton, Mass.; Edward T. Steele, Boston, Mass.; Alvah K. Todd, Milton, Mass.; Charles F. Wallace, Brookline, Mass.; V. T. Vickery, Cambridge, Mass.; E. I. Doe, Waltham, Mass.; H. B. Sawyer, Boston, Mass.

Officers—President, F. S. Pratt, West Newton, Mass.; Vice-President, V. T. Vickery, Cambridge, Mass.; Secretary, A. K. Todd, Milton, Mass.; Treasurer, H.

B. Sawyer, Boston, Mass.; Assistant Treasurer, W. E. Shaw, Jr., Reno, Nevada; Manager, Geo. A. Campbell, Reno, Nevada; Clerk, W. B. Drummond, Portland, Maine.

Verdi Lumber Company

Directors—A. Revert, C. D. Terwilliger, Verdi, Nevada; W. T. Virgin, San Francisco, Cal.; Secretary, C. D. Terwilliger, Verdi, Nevada.

Officers—President, A. Revert, Verdi, Nevada; Vice-President, W. T. Virgin, San Francisco, Cal.; Secretary, C. D. Terwilliger, Verdi, Nevada.

Winnemucca Water and Light Company

For directors and officers see water report.

GAS UTILITIES

Carson City Coal Gas Company

Directors—G. A. Campbell, H. A. Lemmon, W. E. Shaw, Jr., Reno, Nevada.

Officers—President and Manager, Geo. A. Campbell, Reno, Nevada; Vice-President, F. S. Pratt, Boston, Mass.; Secretary, H. A. Lemmon, Reno, Nevada; Treasurer, H. B. Sawyer, Boston, Mass.; Assistant Treasurer, W. E. Shaw, Jr., Reno, Nevada.

Las Vegas Gas Company

Directors—E. W. Griffith, E. W. Park, Jno. S. Park, all of Las Vegas, Nevada.

Officers—President, E. W. Griffith; Vice-President, Ed. W. Clark; Secretary and Treasurer, John S. Park, Las Vegas, Nevada.

Nevada Gas Company

Directors—John Martin, L. P. Lowe, M. B. Petzinger, all of San Francisco, Cal.

Officers—President, John Martin; Vice-President, Treasurer and General Manager, L. P. Lowe; Secretary, M. B. Petzinger.

Reno Power, Light and Water Company

Directors and Officers—Same as Electric Department.

WATER UTILITIES

Austin Water Company

Directors—Emma M. Farnsworth, Louis D. Farnsworth, San Francisco, Cal.; Louis H. Farnsworth, H. M. Chamberlain, T. E. Browne, Salt Lake City, Utah.

Officers—President, Emma M. Farnsworth, San Francisco, Cal.; Vice-President, Louis H. Farnsworth, Salt Lake City, Utah; Secretary and Treasurer, Louis D. Farnsworth, San Francisco, Cal.

Caliente Water System

Directors—Water Commissioners, W. B. Pace, Geo. K. Riding, and J. L. Denton, all of Caliente, Nevada.

Officers—Same as above.

Carson Water Company

Directors—Clara V. Yerington and E. B. Yerington of Carson City, Nevada; H. H. Yerington, San Francisco, Cal.

Officers—President, Clara V. Yerington, Carson City, Nevada; Vice-President, H. H. Yerington, San Francisco, Cal.; Secretary and Treasurer, E. B. Yerington, Carson City, Nevada; Superintendent E. S. Daugherty, Carson City, Nevada.

City of Fallon Water System

Directors—E. S. Berney, Mayor; J. B. Austin, J. C. Jones, Joe Jarvis, Councilmen; C. J. Sutherland, City Engineer, and A. J. Price, City Clerk, all of Fallon, Nevada.

Officers—Same as above, including John Schneider, City Treasurer, and E. E. Winters, City Attorney, Fallon, Nevada.

Dayton Water Works

Sole Ownership—John M. Damon, Dayton, Nevada.

Elko Water Works

Sole ownership—W. T. Smith, San Francisco, Cal.

Ely Water Company

Directors—Frank W. Holmes, Mt. Vernon, N. Y.; H. A. Gray, New York City; H. E. Dodge, New York City; Henry F. J. Knoblock, Bayonne, N. J.; David E. Thomas, Bayonne, N. J.

Officers—President, Frank W. Holmes, Mt. Vernon, N. Y.; Vice-President, H. A. Gray, New York City; Secretary, Henry F. J. Knobloch, Bayonne, N. J.; Treasurer, H. E. Dodge, New York City.

Water Works, Searchlight, Nevada

Sole ownership—L. F. Emrick, Searchlight, Nevada.

The Esmeralda Water and Milling Company

Directors—Frederic L. Sherwin, Ralph S. Young, George W. M. Lennan, all of Colorado Springs, Colo.

Officers—President, Frederic L. Sherwin; Secretary, George W. M. Lennan; Treasurer, Ralph S. Young, all of Colorado Springs, Colo.

Eureka Water Works

Directors—None. Private property. Sole ownership.

Officers—Superintendent, M. M. Fletcher, Eureka, Nevada.

Gold Circle Water Company (Midas, Nevada)

Owner—The Salt Lake Hardware Co., Salt Lake City, Utah; C. S. Warren, Lessee, Midas, Nevada.

The Goldfield Consolidated Water Company

Directors—T. B. Rickey, Berkeley, Cal.; L. B. Curtis, Denver, Colo.; F. M. Ish, Oakland, Cal.; Milo A. Smith, Denver, Colo.; Chas. G. Patrick, Goldfield, Nevada.

Officers—President, T. B. Rickey, Berkeley, Cal.; Vice-President, L. B. Curtis, Denver, Colo.; Secretary and Treasurer, Chas. G. Patrick, Goldfield, Nevada.

Hawthorne Water Works

Private property. Sole ownership—C. B. Burkham, Hawthorne, Nevada.

Indian Springs Water Company

Directors—E. S. Van Dyke, San Francisco, Cal.; F. W. Lockman, Rhyolite, Nevada; Anna E. Lockman, Rhyolite, Nevada.

Officers—President E. S. Van Dyke, San Francisco, Cal.; Vice-President, F. W. Lockman, Rhyolite, Nevada; Secretary, Anna E. Lockman, Rhyolite, Nevada.

Las Vegas Land and Water Company

Directors—J. Ross Clark, H. C. Nutt, W. H. Comstock, C. O. Whittemore, all of Los Angeles, Cal.; H. V. Platt, Salt Lake City, Utah; W. R. Bracken, Las Vegas, Nevada.

Officers—President, H. C. Nutt, Los Angeles, Cal.; Vice-President, W. R.

Bracken, Las Vegas, Nevada; Secretary, W. H. Comstock; Treasurer, W. H. Leete; Auditor, C. C. Barry, Los Angeles, Cal.

Goodsprings Water Service

Sole ownership—R. C. Lochridge, Goodsprings, Nevada.

Lovelock Water System

Directors—City Council; L. A. Friedman, Mayor; Councilmen W. R. Chadwick, L. S. Young, W. L. Bachrodt, all of Lovelock, Nevada.

Officers—Same as above.

Luning Water Works

Sole ownership—F. E. M. Orsi, Luning, Nevada.

Manhattan Water Company

Directors—None. Private ownership.

Owners—Joseph E. Connor and M. E. Wilson, both of Manhattan, Nevada.

Mason Water, Light and Power Company

Directors—M. B. Lichtenstein, B. M. Lichtenstein, San Francisco, Cal.; Nat. Lichtenstein, Mason, Nevada.

Officers—President, M. B. Lichtenstein, San Francisco, Cal.; Vice-President, Secretary and Treasurer, Nat Lichtenstein. Mason, Nevada.

Minden Water Plant

Directors—John B. Dangberg, H. F. Dangberg, Geo. F. Dangberg, Minden Nevada.

Officers—President, John B. Dangberg; Vice-President, Geo. F. Dangberg; Secretary and Treasurer, H. F. Dangberg, all of Minden, Nevada.

Pioche Water Company

Ownership—Amalgamated Pioche Mines and Smelting Corporation.

Officers—President, H. R. Van Wagenen, Pioche, Nevada; Vice-President, Wm. B. Randall, New York City; Secretary and Treasurer, Wm. F. Roberts, New York City.

Reno Power, Light and Water Company

For officers and directors see electric report.

Ruby Hill Water Works

Directors—None. Owned by Fred Bartine, Eureka, Nevada.

Southern Pacific Company (Water Service)

Carlin, Mina, Wells, Montello, Lucin, Schurz, and Cobre, Nevada.

For officers and directors see railroad report.

Tonopah Sewer and Drainage Company

Directors—J. G. Crumley, L. L. Crumley, J. F. Graner, R. W. Piercy, all of Tonopah, Nevada.

Officers—President and General Manager, J. G. Crumley; Vice-President, and Treasurer, L. L. Crumley; Acting Secretary, R. W. Piercy, all of Tonopah, Nevada.

Virginia and Gold Hill Water Company

Directors—W. E. Dean, E. J. McCutcheon, J. E. Walsh, W. S. Hobart, W. G. Dean, J. W. Twiggs, San Francisco, Cal.; D. C. Bates, San Rafael, Cal.

Officers—President, W. E. Dean; Vice-President, E. J. McCutchen, San Fran-

cisco, Cal.; Secretary, D. C. Bates, San Rafael, Cal.; Treasurer, Wells Fargo Nevada National Bank, San Francisco, Cal.

Virginia Ranch Land and Cattle Company

Directors—H. C. Dangberg, Manta J. Dangberg, Edna Nielson, Gardnerville, Nevada; Bertha D. Cardinal, Minden, Nevada; Kate E. Allen, Westwood, Cal.

Officers—President, H. C. Dangberg; Vice-President, Manta J. Dangberg, Gardnerville, Nevada; Secretary and Treasurer, Bertha D. Cardinal, Minden, Nevada.

Wadsworth Light and Power Company

Directors—H. W. Esden, Wadsworth, Nevada; C. E. Mack, Reno, Nevada; H. D. Esden, Oakland, Cal.

Officers—President, H. W. Esden, Wadsworth, Nevada; Vice-President, H. D. Esden, Oakland, Cal.; Secretary, C. E. Mack, Reno, Nevada; Treasurer, H. W. Esden, Wadsworth, Nevada.

Water Company of Tonopah

Directors—Van Horn Ely, Philadelphia, Pa.; E. G. Wheeler, C. B. Zabriskie, New York City; Thos. W. Wilson, Wilmington, Del.; H. P. Carr, Philadelphia, Pa.

Officers—President, Van Horn Ely, Philadelphia, Pa.; Vice-President, E. G. Wheeler, Secretary and Treasurer, C. B. Zabriskie, New York City; Assistant Secretary H. D. Anderson, Philadelphia, Pa.; Assistant Treasurer, Henry P. Carr, Philadelphia, Pa.

Winnemucca Water and Light Company

Directors—Edward Reinhart, Moses Reinhart, Winnemucca, Nevada; Leopold Michels, M. J. Brandenstein, M. Willard, San Francisco, Cal.

Officers—President, Leopold Michels; Vice-President, M. Willard, San Francisco, Cal.; Secretary, Edward Reinhart; Treasurer, Moses Reinhart, Winnemucca, Nevada.

Wonder Water Company

Directors—Wm. Matson, San Francisco; A. C. Dierix, Mountain View, Cal.; M. J. Lindsay, Ross, Cal.; Robt. H. Wright, Oakland, Cal.; E. S. Cunningham, Wonder, Nevada.

Officers—President, Wm. Matson, San Francisco, Cal.; Vice-President, M. J. Lindsay, Ross, Cal.; Secretary and Treasurer, Robt. H. Wright, Oakland, Cal.

Yerington Water Works

Directors—City Council; Elmer Hanson, Mayor; Councilmen, C. R. Ascher, G. A. Knox, J. G. Kaufman, C. H. Masterson.

Officers—Same as above.

GENERAL EXPENSES OF THE PUBLIC SERVICE COMMISSION OF
NEVADA FOR THE PERIOD FROM JANUARY 1, 1917, TO AND
INCLUDING NOVEMBER 30, 1918.

Books and periodicals.....	\$16.50
Express charges.....	3.33
Office stenographers and clerks.....	3,517.50
Outside stenographic fees.....	417.95
Paper and envelopes.....	15.75
Stamps	20.00
Stationary, other than paper.....	32.78
Telegraph service.....	32.78
Telephone service.....	1.15
Traveling expenses.....	363.81
Typewriter repairs and supplies.....	2.00
Miscellaneous	17.90
Total.....	<u>\$4,432.65</u>

NOTE—During the period indicated \$72.50 was turned into the general fund of the State from the sale of transcripts of testimony.

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STATE OF NEVADA

BIENNIAL REPORT

OF THE

NEVADA TAX COMMISSION

1917=1918



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT

1919



LETTER OF TRANSMITTAL

OFFICE OF NEVADA TAX COMMISSION,
CARSON CITY, NEVADA, December 31, 1918.

*To the Honorable the Governor, and Members of the Legislature of the
State of Nevada.*

GENTLEMEN: In compliance with the statutes this biennial report of
the Nevada Tax Commission is respectfully submitted.

EMMET D. BOYLE, *Chairman,*
J. F. SHAUGHNESSY,
W. N. MCGILL,
MOSES REINHART,
P. Y. GILLSON,
F. W. LOCKMAN,
Commissioners.

BIENNIAL REPORT

The following report, showing the results of the work accomplished by the Nevada Tax Commission and the State Board of Equalization in the years 1917 and 1918, is published in accordance with section 19, chapter 177, Statutes of Nevada, 1917.

The Legislature of 1917 enacted a law under which the Tax Commission was reorganized, and in place of being a commission composed, with one exception, of ex officio members, it became a commission composed of seven members, two of whom, the Governor and one associate member of the Railroad Commission, are ex officio members, and five of whom are appointed by the Governor to represent the five leading industries of the State. The personnel of the Tax Commission under the provisions of the law and by appointment of the Governor was, in 1917, as follows:

Governor Emmet D. Boyle, Chairman;

Hon. J. F. Shaughnessy, Associate Member of Railroad Commission;

Hon. W. N. McGill, Ely, appointed for four years, representing livestock interests;

Hon. Moses Reinhart, Winnemucca, appointed for two years, representing banking interests;

Hon. P. Y. Gillson, Reno, appointed for four years, representing business interests;

Hon. F. W. Lockman, Rhyolite, appointed for two years, representing mining interests;

*Hon. George Henningsen, Minden, appointed for four years, representing land interests.

The reorganized Commission held its first meeting at Carson City, April 23, 1917. F. N. Fletcher of Reno was appointed Secretary of the Commission. This meeting was continued with various recesses through the month of May, during which time the valuations of the various interstate and intercounty railroads and public utilities were established for taxation purposes; and the valuations of intracounty railroads and public utilities were established in order to recommend the same to the various County Assessors as provided by law. During these sessions the following owners of taxable property appeared to offer evidence as to the proper valuation of their properties:

American Express Company,
Bullfrog and Nevada Railroad,
Eureka-Nevada Railway,
Las Vegas and Tonopah Railroad,
Nevada Telephone and Telegraph Company,
Wells Fargo & Co. Express,
Western Pacific Railway.

The valuations established on all railroad and public utility properties at these meetings and the apportionment of same to counties is set forth in Tax Commission Bulletin No. 12 issued for the use and direction of County Assessors.

*Resigned in August, 1918, to enter U. S. military service.

STATE BOARD OF EQUALIZATION, 1917

Under the Tax Commission law of 1917 it is provided that "beginning on the third Monday in August the said Commission shall, together with the County Assessors of the several counties of the State, sit in Carson City as a State Board of Equalization. At such meeting it shall be the duty of the State Board of Equalization to review the tax rolls of the various counties as corrected by County Boards of Equalization, and to raise or lower for the purpose of state equalization the valuations therein established by County Assessors and County Boards of Equalization, on any class or piece of property in whole or in part in any county," except interstate and intercounty railroad and public utility property, the valuation of which is fixed by the Tax Commission.

Pursuant to the provisions of the law, the State Board of Equalization met at Carson City on Monday, August 20, 1917. In addition to members of the Tax Commission the various counties were represented by the following Assessors or by persons appointed by the County Commissioners in cases where it was impossible for the Assessors to be present:

Churchill County, by C. M. Way, Deputy Assessor;
Clark County, by A. S. Henderson, District Attorney;
Douglas County, by C. L. Fulstone, County Commissioner;
Elko County, by W. M. Weathers, Assessor;
Esmeralda County, by R. T. Armstrong, Deputy Assessor;
Eureka County, by W. J. Hooper, Assessor;
Humboldt County, by A. E. Organ, Assessor;
Lander County, by H. R. Lemaire, Assessor;
Lincoln County, by D. J. Ronnow, Assessor;
Lyon County, by H. S. Pohe, Assessor;
Mineral County, by C. L. Dimock, Deputy Assessor;
Nye County, by W. H. Thomas, Assessor;
Ormsby County, by J. H. Stern, Assessor;
Storey County, by T. W. O'Connor, Assessor;
Washoe County, by John Hayes, Assessor;
White Pine County, by J. F. Miles, Assessor.

The board remained in session until September 24, engaged in the consideration of the valuations of the various classes of property in the State and the comparative assessed valuations of such properties as had been established by the Assessors. A stenographic report of this meeting has been transcribed and is on file in the office of the Tax Commission.

A comparison of the county rolls disclosed that little attention had been paid by Assessors to the recommendations made by the board in 1917 for the purpose of bringing about uniformity in the assessed valuations of different classes of property throughout the State; particularly was this true in respect to the classification of lands for assessment purposes. A large portion of the session was devoted to the effort of bringing about a nearer approach to uniformity, and changes involving a large portion of the lands on the rolls were ordered by the board. Extensive changes were also ordered in the assessed valuations of various classes of live stock as they appeared on the rolls of some counties. Range cattle were raised from \$35 to \$36 per head, and sheep from \$5 to \$8 per head, in all counties.

For the purpose of securing equity in state taxation between the different counties the board after full debate and long consideration recommended the adoption of the following schedule to be used by County Assessors in 1918:

LIVESTOCK VALUATIONS FOR 1918

Stock cattle, including all calves born in 1917, per head	\$38.00
Assessment of all other cattle left to Assessors.	
Horses, work	Left to Assessor
Horses, saddle	Left to Assessor
Horses, buggy	Left to Assessor
Horses, stock	Left to Assessor
Stallions	Left to Assessor
Brood mares	Left to Assessor
Mules, work	Left to Assessor
Mules, stock	Left to Assessor
Jacks	Left to Assessor
Jennies	Left to Assessor
Burros	Left to Assessor
Sheep, per head	\$9.00
Bucks, per head	12.00
Hogs, per head	12.00
Pigs, per head	4.00
Bees, per stand	3.50

LAND VALUATIONS FOR 1918*Special—*

All lands over \$90 per acre.

Cultivated—

First class	\$80.00 per acre
Second class	65.00 per acre
Third class	50.00 per acre
Fourth class	35.00 per acre

Wild Hay or Meadow—

First class (1 or more tons to the acre)	\$30.00 per acre
Second class (less than 1 ton to the acre)	18.00 per acre

Also any other land of same value due to special conditions.

Pasture—

First class	\$30.00 per acre
Second class	20.00 per acre
Third class	11.00 per acre
Fourth class	7.00 per acre

Arable—

Left to Assessors.

Grazing—

First class	\$15.00 per acre
Second class	10.00 per acre
Third class	5.00 per acre
Fourth class	3.00 per acre
Fifth class	2.00 per acre

All lands of these values not included in any other class.

Barren Lands—

All lands of this character.....\$1.25 per acre

NOTE—Cultivated land shall include all vegetable, orchard, grain, timothy, red top, alfalfa, or any other land of same value as cultivated due to special conditions.

First-class cultivated is land capable of producing five tons of alfalfa, one and one-half tons of timothy or red top, or one ton of grain per acre.

Second-class cultivated is land capable of producing three to five tons of alfalfa, less than one and one-half tons of timothy, or fourteen hundred to two thousand pounds of grain per acre.

Third-class cultivated is land capable of producing two to three tons of alfalfa, or eight hundred to fourteen hundred pounds of grain per acre.

Fourth-class cultivated is land capable of producing less than two tons of alfalfa, or less than eight hundred pounds of grain per acre.

VALUATION OF MOTOR-DRIVEN VEHICLES, 1918

In order to secure a uniform and equitable assessment of motor-driven vehicles in the State, a list of prices used by insurance companies and showing the values of the various cars manufactured was adopted by the State Board, and the depreciated value of used cars worked out on the following basis:

1919 advance model	90 per cent of cost
1918 model	80 per cent of insurance price
1917 model	65 per cent of insurance price
1916 model	50 per cent of insurance price
1915 model	35 per cent of insurance price
1914 model	20 per cent of insurance price

Motor Vehicles except Ford cars—

1919 advance model	90 per cent of original cost
1918 model	85 per cent of insurance price
1917 model	75 per cent of insurance price
1916 model	55 per cent of insurance price
1915 model	40 per cent of insurance price
1914 model	30 per cent of insurance price

Motor vehicles of older model than 1914 were left to Assessors for valuation.

VALUATION OF MERCHANDISE STOCKS, 1918

The last previous inventory shall be taken as the basis of valuation, provided the inventory was taken within six (6) months prior to the time of assessment, and a deduction of fifteen per cent (15%) from the inventory value shall be allowed for depreciation; the factor of 90 per cent shall then be applied to find the assessed value.

Under this rule a stock of merchandise showing an inventory value of \$10,000 would have a depreciated value of \$8,500, and an assessed value of \$7,650.

During this session of the State Board of Equalization hearings were granted to the following taxpayers, who had either petitioned for reductions in their assessed valuations or had been cited to show cause why their assessed valuations should not be increased:

Aurora Consolidated Mines Company, assessment left as fixed by county board;

Carson City Water Company, valuation reduced from \$80,000 to \$75,000;

Carson-Tahoe Flume and Lumber Company, petition denied;

Central Pacific Railway, petition for reduction in assessed valuation of lands in Eureka, Churchill and Lyon Counties, denied;

Consolidated Copper Mines Company, increased from \$195,266 to \$459,776;

Dunphy Estate, petition for reduction, denied;

Ely Securities Company, valuation raised to \$35,000;

J. B. O'Sullivan, granted reduction of \$2,000 in assessment of town property in Sparks;

Mason Townsite Company, petition for reduction, denied;

Nevada Consolidated Copper Company, increased from \$4,580,907 to \$4,596,502;

New Mines Company, reduced from \$20,000 to \$7,500;

Pacific Portland Cement Company, increased \$5,000 on improvements;

Rose Vieira, assessed valuation of plaster property at Mound House reduced from \$1,500 to \$1,000;

Smith Valley Colony Ditch Company, petition denied;

State Bank and Trust Company, petition denied.

On September 24, the State Board of Equalization adjourned.

MEETING OF THE TAX COMMISSION, OCTOBER, 1917

As required by law the Tax Commission met on October 1, 1917, as a final Board of Equalization and remained in session until October 20. During this meeting hearings were granted to the following taxpayers who had petitioned for a reduction in their assessed valuations or had been cited by the Commission to show cause why their assessed valuations should not be raised:

American Express Company,

Bullfrog and Goldfield Railroad,

Central Pacific Railway,

Ely Securities Company,

Mason Valley Mines Company,

Nevada-California Power Company,

Nevada Telephone and Telegraph Company,

Pacific Fruit Express,

Pacific Power Company,

State Bank and Trust Company,

Tonopah and Goldfield Railroad,

Truckee River General Electric Company,

Wells Fargo & Co. Express.

MEETING OF THE TAX COMMISSION, FIRST SESSION, 1918

Under the provisions of chapter 177, Statutes of Nevada, 1917, a regular session of the Tax Commission beginning on the second Monday in January of each year must be held at Carson City, at which valuations shall be established for railroads, public utilities and those classes of property whose valuations are fixed by the Tax Commission. Pursuant to the law the Tax Commission met on January 14, and adopted the valuations on lands, live stock, merchandise and motor vehicles that were recommended and adopted for 1918 by the State Board of Equalization, at its meeting in August and September, 1917, as set forth in the preceding pages, and instructed the Secretary to have bulletins showing such valuations printed and mailed to County Assessors.

During this session which recessed from time to time hearings were granted to various parties interested, and the following appeared:

Austin Water Company.
 American Express Company.
 Bullfrog and Goldfield Railroad.
 Goldfield Consolidated Water Company.
 Las Vegas and Tonopah Railroad.
 Nevada Mine Operators' Association.
 Postal-Telegraph Cable Company.
 Tonopah and Goldfield Railroad.
 Virginia and Truckee Railway.
 Wells Fargo & Co. Express.
 Western Pacific Railway.

The hearing of the Nevada Mine Operators' Association was held at the request of the Tax Commission in order to discuss the matter of the deduction of federal taxes from gross proceeds to find net proceeds on which taxes should be paid. The question was submitted to the Attorney-General who, in an exhaustive opinion, held that taxes were not a legal item of costs against proceeds. This opinion was accepted by mine operators throughout the State. A contrary opinion would have resulted in great loss in taxes to the State and counties, under the heavy war taxes levied by the National Government.

The valuations established for railroads and public utilities in the State and their apportionments to counties is set forth in Tax Commission Bulletin No. 19.

STATE BOARD OF EQUALIZATION, 1918

The State Board of Equalization met on the third Monday of August, 1918, as provided by law. Several counties were not represented by Assessors, and the tax rolls of Churchill, Lander, and Nye Counties had not been filed. Recess was taken until August 21. On this date rolls of Lander and Nye Counties were reported filed. After discussion it was voted to recess until September 9.

On September 9 the board again convened. Rolls from all counties, except Churchill, were reported filed.

The board in 1918 consisted of the Tax Commission and the following Assessors or Deputy Assessors:

Churchill County.....	C. M. Way
Clark County.....	Mrs. C. E. McCarthy
Douglas County.....	Chris Neilsen
Elko County.....	W. M. Weathers

Esmeralda County.....	W. A. Ingalls
Eureka County.....	W. J. Hooper
Humboldt County.....	A. E. Organ
Lander County.....	H. R. Lemaire
Lincoln County.....	D. J. Ronnow
Lyon County.....	H. S. Pohe
Mineral County.....	C. L. Dimock
Nye County.....	B. M. Bateman
Ormsby County.....	J. H. Stern
Storey County.....	J. J. Carew
Washoe County.....	John Hayes
White Pine County.....	J. F. Miles

The counties of Esmeralda and Lincoln were not represented at the 1918 session, except at the first meeting in August.

A comparison of the various county rolls disclosed a marked improvement over the preceding year in the line of uniformity of assessments of the different classes of property. Fewer changes were found necessary for purposes of equalization between counties than in previous years, though important raises were ordered in the land valuations of certain counties where there was an evident failure to bring in valuations consistent with the schedules adopted by the board for 1918. In other counties the valuations placed on lands by the Assessor were lowered by the board. No changes were found necessary in the valuations of live stock as they appeared on the rolls.

In the valuation of merchandise stocks for 1918 it appeared from the rolls that the schedule adopted by the board in 1917 had been successfully followed in some counties, but with poor results in others; some counties showed an increase in the assessed value of merchandise stocks of more than 100 per cent, while others showed a decrease. In most cases a lack of increase was due to failure to secure the inventories required by the schedule. It is evident from the rolls that merchandise stocks throughout the State are very unevenly, and, therefore, inequitably assessed. On the whole, the assessed value of this class of property was increased more than 60 per cent over 1917.

The use of the schedule ordered by the board in assessing motor-driven vehicles resulted in a much nearer approach to uniformity of assessment of this class of property than in previous years. It well illustrates the advantages and equity of uniform and scientific methods applied to the valuation of property for purposes of taxation.

After consideration of conditions throughout the State the board recommended for 1919 the same schedules that were used in 1918 for the assessment of lands, live stock, merchandise, and motor vehicles. These schedules appear on preceding pages of this report.

A budget of estimated expenditures for state purposes for the year beginning December 1, 1918, was placed before the board, which is summarized as follows:

Total estimated expenditures, December 1, 1918, to December 1, 1919.....	\$1,490,081
Funds available from licenses, fees, interest, etc.	365,909
Amount required from taxation.....	\$1,124,172

It appeared from a summary of the county rolls as modified by the changes ordered by the board that the final total valuation of taxable property in the State was approximately \$198,000,000. Deducting 4 per cent for expected delinquencies would leave a net valuation on which taxes would be paid of approximately \$190,000,000. The state tax levy of $57\frac{55}{100}$ cents covering this period, applied to the valuation

of \$190,000,000, would produce \$1,093,450. As this approximates the amount required, no action under chapter 177, section 6, providing for a horizontal increase or decrease of the assessed valuation, was deemed necessary. The state budgets for the two years 1917 and 1918 will be found in Table No. 15.

During the session the following taxpayers appeared before the board to ask for reductions in the assessed valuations of their properties:

Central Pacific Railway, petition for reduction of assessment on lands in Churchill and Lyon Counties. Petition denied.

Douglas County Farmers Bank granted reduction in assessed valuation from \$30,000 to \$22,500.

Land Development Company, Lander County, assessment on 11,527 acres of land reduced from \$11 per acre to \$7 per acre.

Having completed the business before it, the State Board of Equalization adjourned on September 20.

MEETING OF THE TAX COMMISSION, OCTOBER, 1918

On October 1, 1918, the Tax Commission met in regular session, sitting as a final Board of Equalization. During the session the following taxpayers were heard in relation to the assessed valuations of their properties:

Aurora Consolidated Mines Company, original assessment increased from \$60,190 to \$100,000;

Carson Valley Bank, assessment reduced from \$75,000 to \$67,500;

Carson Water Company, assessment reduced from \$85,000 to \$80,000;

Central Pacific Railroad Company, no change;

Elko-Lamoille Power Company, no change;

Ely Light and Power Company, assessment on abandoned plant reduced from \$15,500 to \$6,000;

Goldfield Consolidated Mines Company, original assessment increased from \$266,465 to \$307,628;

Indian Springs Water Company, abandoned plant reduced to \$500;

Nevada-California Power Company, petition for reduction denied;

Patrick Walsh, Lander County, assessed valuation of 10,705 acres of land reduced from average of \$15.75 per acre to \$10 per acre;

Postal Telegraph-Cable Company, petition for reduction denied;

Reno Traction Company, assessment reduced from \$90,000 to \$60,000;

Tonopah Banking Corporation, assessment reduced from \$41,600 to \$20,800;

Truckee River General Electric Company, no change;

Virginia and Gold Hill Water Company, assessment reduced from \$266,927 to \$200,000;

Winnemucca Light and Water Company, reduced from \$135,000 to \$126,009.

From showings made by the American Railway Express Company, successor in Nevada to Wells Fargo & Co. Express, American Express Company, and Adams Express Company, that the operating business of these companies had resulted in practically no profits in 1918, and that owing to this condition and for war purposes the entire express business in the State had been taken over by the American Railway Express Company, operating under the direction of the Federal Government, it was ordered by the Tax Commission that the assessed valuation of all railway express business in Nevada be fixed at \$90 per mile for 1918, and that by mutual agreement between the several companies one-half of these values be assessed to the American Railway Express Company and the balance to the original owners according to the several mileage ownerships.

Having completed the business before it, the Tax Commission adjourned October 18, 1918, subject to the call of the Chairman.

THE STATE BUDGET

The Nevada laws now require that the State, counties, cities, school, and special districts shall be operated under the budget system, which provides that all appropriations of public moneys shall be predicated upon a careful estimate of expected costs based on actual experience in previous years. The state budget, containing the estimated expenditures of all state departments in detail for the ensuing year, or years, is prepared for the use of the Legislature, the State Board of Equalization, and the Tax Commission. The Legislature, basing its estimates upon the budget and the expected total assessed valuation in all the counties for each year of the biennial period, establishes the state tax rate for each year. The State Board of Equalization and the Tax Commission, sitting as a final Board of Equalization in October, having before them the actual assessed valuations and the rate fixed by the Legislature, are required to so raise or lower the assessed valuations that the required amount of money will be raised by the tax rate already determined. The more logical method of determining the tax rate by dividing the amount appropriated by the assessed valuation, a matter purely of arithmetic, is used by all counties. The state method, when used, results in confusion of all the county tax lists with no compensating advantage. The state budgets for the tax years December 1, 1917, to November 30, 1918, and December 1, 1918, to December 1, 1919, will be found under Table No. 15.

COUNTY BUDGETS

Under the provisions of chapter 149, Statutes of 1917, County Commissioners are required to file with the Tax Commission early in each year a budget estimate of expected receipts and expenditures for the current year with an estimate of the valuation of taxable property in the county and the tax rate required to raise the required funds from taxation. It is the duty of the Tax Commission to pass upon these budgets, and later when the county tax rolls have been filed and the actual assessed valuations are known the Commission is authorized to order in each county such a tax rate as will provide the funds required from taxation as shown in the budgets. The budget system for county governments in Nevada was inaugurated in 1915. It has amply justified the expectations of its sponsors. Under this system county officials having before them statements showing receipts and expenditures of former years are enabled to estimate closely the probable receipts and expenditures of the ensuing year. Such a system requiring careful comparison and forethought cannot fail to have a wholesome effect upon expenditure, especially when the budget is published in county papers as required by law. It is gratifying to note a consistent improvement in the budgets filed with this Commission from year to year. A summary statement of county budgets for 1918 will be found under Table No. 5.

ANALYSIS OF STATE AND COUNTY BUDGETS FOR 1918

The total amounts of estimated expenditures for all governmental purposes in State, counties, cities and special districts as shown in the various budgets for 1918 are as follows:

	<i>Estimated expenditures</i>	<i>Receipts other than taxes</i>	<i>Receipts from taxes</i>
State.....	\$1,543,752	\$456,437	\$1,087,315
Counties.....	2,908,236	639,224	2,264,012
Cities.....	417,003	171,628	245,375
Special districts.....	378,404	-----	378,404
Totals.....	\$5,242,395	\$1,267,289	\$3,975,106

There is of necessity an overlapping of accounts in the above tabulations, arising from the fact that the State collects certain amounts which it returns directly to the counties; this overlapping includes the District Judges' salaries, amounting to \$51,500, and the public school funds, estimated at \$268,720, which appear in the estimated expenditures of both State and counties, but properly belong in the latter. Deducting these items from the estimate of state expenditures, and the further item of \$50,000 noted in the budget as a contingent fund to reimburse the general fund, there is left the sum of \$1,173,532 for estimated state expenditures, which, according to the budget, would be expended as follows:

ESTIMATED STATE EXPENDITURES

Administration.....	\$412,372
Charities, corrections and hospitals.....	206,610
Educational.....	251,550
Highways.....	206,000
Bond interest and redemption.....	97,000
Total.....	\$1,173,532

A like analysis of county, city, and special district expenditures shows the following:

ESTIMATED COUNTY, CITY AND SPECIAL DISTRICT EXPENDITURES

Administration.....	\$1,321,740
Charities, corrections and hospitals.....	201,478
Educational.....	1,145,221
Highways and streets.....	596,748
Bond interest and redemption.....	437,913
Total.....	\$3,702,100

If the above estimated expenditures for State, counties, cities and special districts be combined, and the payments of interest and debts be excluded, the result is as follows:

		<i>Per cent</i>
State administration.....	\$412,372	9.50
County, city and special districts.....	1,321,740	30.45
Charities, corrections and hospitals.....	408,088	9.40
Educational.....	1,396,771	32.18
Highways.....	801,748	18.47
Totals.....	\$4,340,719	100.00

If charities, corrections and hospitals, and highways be combined with the state and county administrations the result is as follows:

		<i>Per cent</i>
State administration.....	\$324,982	19.00
County, city and special districts.....	2,118,966	48.80
Educational.....	1,396,771	32.20
Totals.....	\$4,840,719	100.00

It should be noted that the above figures are from budget estimates, which will differ from actual results, but the differences should not be sufficient to greatly disturb the percentages given. The Department

of Highways, however, actually expended much less than the amount estimated.*

AVERAGE TAX LEVY

As the total assessed valuation of taxable property in the State in 1918 is \$198,012,556 and the total estimated amount required from taxation for State, counties, cities, and special districts is \$3,975,106, the average total tax levy throughout the State is practically 2 per cent on assessed values.

If that portion of mining property which the State Constitution exempts from taxation were added to the assessed valuation, the total would be greatly increased, with a corresponding decrease in the average rate. Taxable property in the State is assumed to be assessed at 90 per cent of its actual market value, but much of it is undoubtedly assessed considerably below that figure. There is also a very large amount of privately owned property in Nevada which escapes taxation altogether, through failure of the owner to list it, or failure of the Assessor to find it and place it on the rolls. If all privately owned property in the State were on the tax rolls at its fair market value, the average tax rate for all governmental purposes, within the State, would hardly exceed 1 per cent. Property fairly assessed is carrying the governmental burden of property which is assessed too low or not at all. If the valuation of property for purposes of state taxation, which is purely a state function, were in the hands of the State, the problem of equalization between counties, which is the chief source of inequity in taxation under present methods, would be immediately solved, for the simple reason that the valuing officer would have nothing to consider but the equity of his acts, regardless of county lines or political consequences. The employment of local officers to value property for state taxes invariably leads to "competitive undervaluation," as results in every State have conclusively shown. In Nevada the results have always unfairly increased the tax burdens of counties least able to bear them. The fault is not with the personnel of the County Assessors, who are generally able and faithful public servants, but with the system under which they work.

LOSS OF REVENUE FROM LIQUOR LICENSES

The adoption by popular vote of the law prohibiting all traffic in intoxicating liquors automatically destroys a source of state revenue which has heretofore provided approximately \$70,000 annually. This loss must, of course, be made up from other sources or by decreased expenditures. For the tax year beginning December 1, 1918, the budget estimates (Table No. 15) show an expected decrease in state expenditures approximating \$50,000 as compared with the preceding year. There is also a decrease in the state tax rate, but an increase in the total assessed valuation over 1917 of approximately \$15,000,000. The loss of revenue from liquor licenses was anticipated in the budget. The increased valuation, together with expected decrease in expenditures, will be sufficient to offset the loss of revenues from licenses.

PERSONAL PROPERTY TAX

For the first forty years of the State's existence personal property bore approximately 30 per cent of the tax burden in Nevada. This

*The State Controller's report for 1918 published since the preparation of the above tabulations shows total state expenses of \$1,167,188, including deficiency expenditures of \$52,404.

was followed by a gradual decline until in 1913 personal property represented only 8.5 per cent of the assessed valuation. In 1918 the ratio has been increased to 22.1 per cent.

Attention has repeatedly been called to the fact that a very large share of intangible property, especially money and credits, wholly escapes taxation under our present laws. This is true, not only in Nevada, but in all States with similar laws. The reason is that to collect a tax on money or credits where the local and state tax rates amount to 2 or 3 per cent would result in practical confiscation of income; the natural result in most cases is that either the owner removes his intangible property to localities where it will not be taxed or he neglects to list it, with the tacit consent of the Assessor, who realizes that confiscation is not just and removal of the property from the community is not politic. To obviate the inequities arising under legal enactments similar to those in Nevada, many States have changed their constitutional provisions covering the taxation of certain classes of property, to the end that such property may neither escape taxation altogether nor be so heavily taxed as to confiscate a large portion of its returns. In States where such action has been taken the results have been gratifying. Under a low tax rate, ranging from 2 to 5 mills, and uniform throughout the State, owners of moneys and credits have listed the same and paid taxes amounting in the aggregate to large sums on property formerly escaping taxation altogether. The National Tax Association, whose membership includes the leading practical tax experts, as well as the leading students of taxation, in the United States and Canada, after a thorough investigation of the subject, recommended the following amendment for all States in which, as in Nevada, the present constitutions prescribe a uniform tax rate on all classes of property:

The power of taxation shall never be surrendered or contracted away. All taxes shall be uniform on the same class of property within the territorial limits of the authority levying the tax, and shall be levied and collected for public purposes only.

Such an amendment to the Constitution of Nevada would make it possible to place a reasonable tax on property amounting to probably not less than \$35,000,000, which is now escaping taxation altogether.

RECORDING TAX ON MORTGAGES AND CONVEYANCES

The attempt to shift the burden of taxation from a mortgaged property to the owner of the mortgage has never proven successful in Nevada. On the other hand, the protection which the State provides to the holders of mortgages by making such securities a public record constitutes a governmental benefit of great value for which those who receive it should in equity return to the State something more than the bare cost of recording. In some States a small recording tax is levied which varies with the valuation of the instrument recorded. A like tax is also levied on deeds and conveyances. It is not a recording fee, but a tax on a chose in action so levied as to be surely and economically collected. Experience has shown that owners of such forms of property, recognizing the equity of the tax and the real value to them of the special service performed by the State, cheerfully pay it without attempting to pass it on to the owner of the property. The revenues

to be secured from this form of taxation would not be large, but the tax would be eminently just, and failure to levy it constitutes in principle the granting of special privileges to individuals without equitable compensation to the State.

INCREASED TAXATION

There is a very natural inclination on the part of taxpayers to assign the causes of increased taxation to recklessness and indifference on the part of those responsible for public expenditures. A careful consideration of the county budgets filed with this Commission will show that the heaviest increases in taxation for county purposes are as often as otherwise found in counties whose Commissioners are men of more than average business capacity and experience and who are themselves heavy taxpayers. An analysis of the expenditures for state purposes discloses that a very large proportion of the increases are for education, charitable institutions, and public service. The expenditures for public service are much more than offset by the direct financial receipts to the State Treasury and the indirect financial benefits to taxpayers. The increased expense to the State is charged to the commissions, but they are not credited with the savings effected.

The increases in county expenditures have likewise been largely along the line of education and public improvements. Sufficient data is not available to speak with accuracy, but from information to be secured from the budgets of the past four years, it is evident that the ratio of increase in the cost of administering county affairs has, excepting for education and public improvements, been less than the ratio of increase in the actual value of taxable property, far less than the ratio of increase in assessed values, and certainly less than the increase in the actual labor involved. There has been a notable increase in the expenditures for common and high schools in nearly all the counties; and because of the highway law passed in 1917 in order to meet the requirements of the Federal Act, under which the National Government shares with the State and counties the cost of constructing certain state highways, the expenditures for roads have nearly doubled in many counties.

PURPOSES OF THE STATE TAX COMMISSION

The Tax Commission was originally organized in 1913 for two special purposes: First, to relieve the deplorable financial condition of the State which, after borrowing to its constitutional limit, was unable to meet its obligations from the revenues provided by the tax levies on wholly inadequate property valuations brought in by County Assessors; and, second, to remedy so far as possible the gross inequalities in the assessed valuations of various classes of property in all counties, and of all classes of property in some counties. The first object was attained within two years from the organization of the Commission, since which time the State has been upon a sound financial basis. The deficits of the four preceding years, amounting to \$481,769.75 (see Governor's message to Special Session of Legislature in 1913) have been absorbed, and a healthy cash balance amounting to approximately as much more placed in the State Treasury. The second object—that of bringing about fair play between taxpayers—has been slower of attain-

ment, but no one with an intelligent grasp of the facts will deny that the tax burden in the State is far more equitably distributed than it was prior to 1913.

Attention of taxpayers and citizens is called to the tabulations which follow, covering the assessed valuations of different classes of property in the several counties for the years 1917 and 1918.

Respectfully submitted,

EMMET D. BOYLE, *Chairman,*
J. F. SHAUGHNESSY,
W. N. MCGILL,
MOSES REINHART,
P. Y. GILLSON,
F. W. LOCKMAN,
Commissioners.

TABLE No. 1*
Statement of Assessed Valuations of Property by Classes and Counties for Year 1917, as Tabulated from Segregations of Tax Rolls
by County Assessors

County	Real estate and improve- ments	Railroads and public utilities	Mining prop- erty and net proceeds of mines	Live stock	Personal property	Motor vehicles	Merchandise	Banks	Total	Per cent
Churchill	\$3,594,157	\$3,268,942	\$375,115	\$330,332	\$220,037	\$38,450	\$126,496	\$39,525	\$8,596,054	4.67
Clark	1,483,726	5,080,864	736,465	106,959	111,219	74,497	64,460	23,405	7,401,596	4.13
Douglas	1,887,923	5,124,306	2,500	767,147	131,770	64,888	6,250	57,800	3,042,594	1.65
Elko	12,661,604	15,468,654	443,993	6,137,478	471,110	110,175	226,015	186,055	35,725,984	19.39
Esmeralda	3,644,964	3,644,964	1,219,907	83,279	87,895	62,236	75,850	75,000	5,780,113	3.13
Eureka	1,877,153	3,133,753	1,117,024	905,759	108,341	17,437	38,580	26,459,661	6,096,096	3.31
Humboldt	8,721,355	12,633,491	512,710	3,580,664	213,312	136,206	219,720	412,110	26,459,661	14.36
Lander	1,979,145	2,835,067	67,875	958,006	123,558	32,883	57,250	32,000	5,885,794	3.08
Lincoln	4,323,623	4,715,703	642,270	666,238	82,358	58,330	12,410	6,636,562	8,677,892	4.66
Lyon	2,872,842	2,961,418	1,506,669	800,859	151,750	89,094	120,100	65,660	4,580,071	2.49
Mineral	448,754	2,963,132	592,392	339,156	38,235	57,543	90,309	98,537	10,324,135	5.60
Nye	2,065,040	2,295,611	3,722,167	1,404,605	108,744	213,402	46,308	75,000	1,659,395	.90
Ormsby	853,224	466,220	23,975	13,338	81,135	18,599	39,414	14,500	1,791,990	.97
Storey	399,976	892,268	332,760	2,207,238	670,492	330,070	651,330	1,471,500	28,516,898	15.48
Washoe	14,165,740	8,989,138	31,290	2,207,238	670,492	330,070	651,330	1,471,500	28,516,898	15.48
White Pine	2,086,410	2,554,101	16,007,616	1,285,273	146,967	125,925	940,370	141,500	23,278,062	12.63
Totals	\$56,034,638	\$71,619,723	\$26,334,628	\$20,130,070	\$3,069,011	\$1,486,290	\$2,964,124	\$2,705,002	\$184,255,486	100.00
Per cent by classes	30.41	38.82	14.29	10.92	1.67	.81	1.61	1.47		

*Table includes Assessors' estimates of uncollected personal property and net proceeds of mines.

TABLE No. 2
County Valuations in 1917 as Estimated for Budgets, as Fixed by Assessors, as
Finally Equalized by State Board of Equalization and Tax Commission,
and Initial and Final Tax Rates.

Counties	Estimated valuation	Original tax rolls*	Final tax rolls	Initial tax rate	Final tax rate
Churchill	\$3,000,000	\$8,037,422	\$9,598,054	\$1.033	\$0.984
Clark	7,500,000	7,867,523	3,001,565	1.610	1.56
Douglas	2,741,377	2,399,274	35,725,024	2.00	1.90
Elko	24,000,000	34,778,413	35,725,024	1.823	1.80
Esmeralda	5,246,000	6,073,413	6,730,113	1.623	1.623
Eureka	5,649,000	6,073,413	6,069,068	1.073	1.00
Humboldt	24,574,293	26,373,353	28,469,661	1.040	1.04
Lander	6,269,000	6,332,630	6,535,734	1.190	1.16
Lincoln	6,100,000	6,375,198	6,634,592	1.290	1.16
Lyon	7,000,000	8,371,071	8,577,322	1.6225	1.40
Mineral	4,500,000	4,492,104	4,530,071	1.7365	1.7365
Nye	10,000,000	10,089,639	10,324,135	1.9604	1.81
Ormsby	1,600,000	1,663,632	1,669,395	1.9765	1.9765
Storey	1,770,000	1,795,586	1,791,990	1.7395	1.71
Washoe	27,000,000	27,638,990	28,516,898	1.0265	.98
White Pine	21,250,000	22,446,510	23,278,062	.87	.80
Totals	\$173,374,485	\$178,555,917	\$184,255,496		

*Including Assessors' estimates of personal and net proceeds uncollected.

TABLE No. 3*
Statement of Assessed Valuations of Property by Classes and Counties for Year 1918, as Tabulated from Segregations of Tax Rolls
by County Assessors

County	Real estate and improvements	Railroads and public utilities	Mining property and proceeds of mines	Live stock	Personal property	Motor vehicles	Merchandise	Banks	Total	Percent
Churchill	\$3,950,102	\$3,450,527	\$339,090	\$762,816	\$238,899	\$123,855	\$177,320	\$98,791	\$9,430,400	4.76
Clark	2,553,222	6,743,455	492,607	138,122	74,620	166,064	96,240	60,000	8,332,960	4.21
Courage	14,038,106	140,076	3,800	960,665	108,864	101,128	97,625	70,800	3,471,053	20.14
Elko	1,368,773	17,850,871	479,632	5,922,217	321,842	238,416	290,304	288,825	39,866,319	2.88
Esmeralda	1,799,597	3,802,813	1,131,773	96,022	42,902	38,037	21,444	60,000	6,703,827	16.34
Eureka	9,731,697	3,446,099	183,648	579,006	151,907	98,036	80,772	470,168	30,990,871	16.34
Humboldt	1,831,968	1,469,479	764,368	4,590,443	289,067	131,826	94,772	470,168	30,990,871	16.34
Lander	1,801,083	2,452,822	284,368	1,326,146	75,369	15,950	124,465	39,100	7,394,544	3.70
Lincoln	3,166,803	2,368,829	449,828	850,150	31,275	189,446	197,130	75,040	9,841,474	5.02
Lyon	4,458,898	3,369,684	1,779,355	914,390	265,950	189,446	197,130	75,040	9,841,474	5.02
Meral	2,044,438	3,314,447	1,471,590	538,707	54,964	86,371	44,430	75,800	11,901,460	5.66
Nye	898,176	2,552,098	4,102,689	1,896,419	302,714	271,364	431,898	67,800	11,901,460	5.66
Ormsby	898,176	487,611	1,160	47,589	107,033	63,554	77,081	67,800	1,912,582	9.7
Stonewall	408,299	898,346	840,631	7,954	113,203	29,129	95,110	1,525,600	\$2,493,302	16.41
Washoe	15,460,942	10,698,071	41,800	2,629,292	774,912	592,139	870,606	1,525,600	18,541,636	9.36
White Pine	2,328,837	3,041,211	8,457,354	1,522,948	1,063,177	208,483	1,739,695	146,000	\$198,012,556	100.00
Totals	\$80,821,632	\$31,606,940	\$19,268,407	\$22,016,717	\$4,066,261	\$2,540,089	\$4,702,376	\$2,990,124		
Per cent by classes	80.72	41.21	9.73	11.12	2.06	1.23	2.38	1.51		

*Table includes Assessors' estimates of uncollected personal property and net proceeds of mines.

TABLE No. 4
County Valuations in 1918, as Estimated for Budgets, as Fixed by Assessors, as
Finally Equalized by State Board of Equalization and Tax Commission,
and Initial and Final Tax Rates.

Counties	Estimated valuation	Original tax rolls*	Final tax rolls	Initial tax rate	Final tax rate
Churchill.....	\$8,500,000	\$9,523,451	\$9,430,400	1.2719	1.22
Clark.....	7,760,000	8,157,297	8,382,860	1.29	1.77
Douglas.....	3,976,000	3,469,418	3,471,088	1.79	1.79
Elko.....	40,500,000	39,180,555	39,883,319	1.08	1.08
Esmeralda.....	5,376,000	5,636,655	5,703,327	1.075	1.075
Eureka.....	6,702,000	6,652,488	6,607,857	1.05	1.05
Humboldt.....	29,314,495	30,724,375	30,380,317	.95	.95
Lander.....	6,304,709	6,353,450	6,203,842	1.145	1.145
Lincoln.....	7,200,000	7,324,564	7,324,564	1.00	1.00
Lyon.....	9,270,880	10,323,534	9,941,415	1.136	1.11
Mineral.....	5,000,000	4,872,541	4,832,227	1.0645	1.0645
Nye.....	11,000,000	11,204,100	11,201,500	1.30	1.30
Ormsby.....	1,700,000	1,862,601	1,749,560	1.9765	1.9765
Stewart.....	1,750,000	1,985,423	1,912,562	1.7745	1.7745
Washoe.....	31,000,000	32,598,847	32,483,302	.9765	.9765
White Pine.....	18,000,000	18,568,669	18,541,636	1.05	1.05
Totals	\$198,241,064	\$198,253,170	\$196,012,556		

*Including Assessors' estimates of personal and net proceeds uncollected.

TABLE No. 5
Estimated Expenditures of Counties, Including Cities and Special Districts, for the Year 1918, as Compiled from Budgets Filed with the Nevada Tax Commission

Counties	Estimated valuation	Expense of administration	Indigent fund	Highways and streets	Bond redemption, interest, and debts	Educational	Estimated total expenditures	Revenue other than taxes	Revenue from taxes	Estimated tax rate
Churchill—General	\$8,540,000.00	\$53,288.78	\$8,578.81	\$8,784.63	\$9,285.23	\$61,411.38	\$141,308.83	\$38,193.83	\$108,115.00	\$1.2719
City of Fallon—		12,945.00		4,000.00	2,485.00		19,430.00	4,480.00	16,000.00	1.5789
Special districts					6,291.46	8,320.00	14,611.46		14,611.46	
Totals	\$8,540,000.00	\$66,233.78	\$8,578.81	\$12,784.63	\$18,041.69	\$69,731.38	\$175,350.29	\$37,623.83	\$137,726.46	
Clark—General	\$7,760,000.00	\$47,786.68	\$4,087.50	\$14,787.00	\$34,385.00	\$80,203.32	\$181,189.50	\$41,407.00	\$139,782.50	\$1.71
City of Las Vegas—		8,961.00		1,986.00	3,724.00		14,700.00	6,720.00	7,980.00	.60
Special districts					7,040.00	16,249.00	23,289.00		23,289.00	
Totals	\$7,760,000.00	\$56,747.68	\$4,087.50	\$16,782.00	\$45,099.00	\$96,452.32	\$219,188.50	\$48,127.00	\$171,061.50	
Douglas—General	\$3,375,000.00	\$19,700.00	\$2,500.00	\$17,375.00	\$7,500.00	\$24,650.00	\$71,725.00	\$11,400.00	\$60,325.00	\$1.79
Special districts		1,145.00			800.00	3,075.00	5,020.00		5,020.00	
Totals	\$3,375,000.00	\$20,845.00	\$2,500.00	\$17,375.00	\$8,300.00	\$27,725.00	\$76,745.00	\$11,400.00	\$65,345.00	
Elko—General	\$40,500,000.00	\$155,350.00	\$30,000.00	\$115,500.00	\$68,100.00	\$155,968.00	\$525,005.00	\$78,600.00	\$446,405.00	\$1.103
City of Elko—		28,870.00		1,500.00	14,320.00		45,190.00	20,926.94	24,263.06	1.35
Special districts					11,481.00	13,948.00	25,369.00		25,369.00	
Totals	\$40,500,000.00	\$184,220.00	\$30,000.00	\$117,000.00	\$84,481.00	\$169,914.00	\$595,595.00	\$99,526.94	\$496,068.06	
Emeralds—General	\$5,375,000.00	\$55,500.00	\$21,000.00	\$8,875.00	\$5,000.00	\$37,225.00	\$127,600.00	\$37,568.75	\$90,031.25	\$1.675
Special districts		12,320.00			5,935.05	3,375.00	21,630.05		21,630.05	
Totals	\$5,375,000.00	\$67,820.00	\$21,000.00	\$8,875.00	\$10,935.05	\$40,600.00	\$149,230.05	\$37,568.75	\$111,661.30	
Eureka—General	\$6,700,000.00	\$38,396.00	\$2,680.00	\$14,400.00		\$23,200.00	\$78,616.00	\$11,616.00	\$67,000.00	\$1.00
Special districts		714.08					714.08		\$67,714.08	
Totals	\$6,700,000.00	\$39,110.08	\$2,680.00	\$14,400.00		\$23,200.00	\$79,330.08	\$11,616.00	\$67,714.08	
Humboldt—General	\$29,815,495.00	\$108,483.39	\$16,398.52	\$76,057.19	\$37,289.37	\$98,638.74	\$331,847.21	\$48,600.00	\$283,247.21	\$0.95
City of Winnemucca—		18,899.07		10,072.25	12,587.78		41,679.10	19,611.49	21,967.61	.88
City of Lovelock—		6,174.49		5,579.56	17,614.75		29,388.80	8,854.06	20,534.75	2.18
Special districts					5,997.00	10,130.00	16,127.00		16,127.00	
Totals	\$29,815,495.00	\$128,596.95	\$16,398.52	\$91,709.00	\$73,448.90	\$108,768.74	\$418,922.11	\$77,065.54	\$341,856.57	
Lander—General	\$6,804,708.00	\$47,982.96	\$3,511.35	\$7,204.71		\$19,739.90	\$93,388.92	\$11,200.00	\$72,188.92	\$1.145
Special districts				8,823.64	\$2,745.41	2,287.64	13,356.89		13,356.89	
Totals	\$6,804,708.00	\$47,982.96	\$3,511.35	\$15,528.35	\$2,745.41	\$22,027.74	\$96,745.81	\$11,200.00	\$85,545.81	

Lincoln—General	\$7,200,000.00	\$26,370.00	\$2,160.00	\$3,000.00	\$22,600.00	\$39,580.00	\$93,710.00	\$21,710.00	\$72,000.00	\$1.00
Special districts		423.00			740.00	1,620.20	2,683.20		2,683.20	
Totals	\$7,200,000.00	\$26,793.00	\$2,160.00	\$3,000.00	\$23,340.00	\$41,100.20	\$96,393.20	\$21,710.00	\$74,683.20	
Lyon—General	\$9,270,880.00	\$43,650.00	\$7,000.00	\$55,770.00	\$11,000.00	\$35,000.00	\$162,420.00	\$52,450.00	\$109,970.00	\$1.186
City of Yerington		5,460.00		3,680.00	5,786.66		14,886.66	9,170.00	5,716.66	1.50
Special districts		236.00			15,862.83	28,433.75	44,622.58		44,622.58	
Totals	\$9,270,880.00	\$49,336.00	\$7,000.00	\$59,450.00	\$32,739.49	\$63,433.75	\$221,929.25	\$61,620.00	\$160,309.24	
Mineral—General	\$5,000,000.00	\$48,325.00	\$12,000.00	\$20,000.00	\$5,100.00	\$29,000.00	\$114,425.00	\$17,200.00	\$97,225.00	\$1.8645
Special districts						1,796.00	1,796.00		1,796.00	
Totals	\$5,000,000.00	\$48,325.00	\$12,000.00	\$20,000.00	\$5,100.00	\$30,796.00	\$116,220.00	\$17,200.00	\$99,020.00	
Nye—General	\$11,000,000.00	\$102,280.00	\$20,000.00	\$23,000.00	\$3,220.00	\$63,500.00	\$212,000.00	\$69,000.00	\$143,000.00	\$1.30
Tonopah town and schools		32,000.00			8,822.00	29,026.00	69,846.00		69,846.00	1.06
Special districts						4,079.00	4,079.00		4,079.00	
Totals	\$11,000,000.00	\$134,280.00	\$20,000.00	\$23,000.00	\$12,042.00	\$96,606.00	\$286,927.00	\$89,000.00	\$216,927.00	
Ormsby—General	\$1,700,000.00	\$19,990.00	\$4,000.00	\$7,700.00	\$5,900.00	\$22,800.00	\$60,390.00	\$25,103.50	\$35,286.50	\$1.9765
City of Carson		8,450.00		6,250.00	3,300.00		18,000.00	7,386.00	10,606.00	1.06
Special districts					3,625.00		3,625.00		3,625.00	
Totals	\$1,700,000.00	\$28,440.00	\$4,000.00	\$13,950.00	\$12,525.00	\$22,800.00	\$82,015.00	\$32,498.50	\$49,516.50	
Storey—General	\$1,750,000.00	\$19,250.00	\$9,500.00	\$2,000.00	\$5,300.00	\$14,250.00	\$44,000.00	\$11,175.00	\$32,825.00	\$1.7745
Virginia City		7,000.00		3,500.00			10,500.00		10,500.00	
Town of Gold Hill		1,760.00		770.00			2,530.00		2,530.00	
Totals	\$1,750,000.00	\$28,010.00	\$9,500.00	\$6,270.00	\$5,300.00	\$14,250.00	\$57,030.00	\$11,175.00	\$45,855.00	
Washoe—General	\$31,000,000.00	\$137,700.00	\$37,200.00	\$65,100.00	\$23,100.00	\$158,500.00	\$421,600.00	\$104,000.00	\$317,600.00	\$0.9765
City of Reno		104,500.00		55,380.55	24,900.00		184,780.55	74,044.69	110,686.86	.90
City of Sparks		12,434.00		13,774.00	4,100.50		30,308.50	7,676.21	22,632.29	.934
Special districts						46,061.75	46,061.75		46,061.75	
Totals	\$31,000,000.00	\$254,634.00	\$37,200.00	\$134,204.55	\$52,100.50	\$204,561.75	\$682,700.80	\$185,720.90	\$496,979.90	
White Pine—General	\$18,000,000.00	\$103,500.00	\$16,000.00	\$38,000.00	\$14,500.00	\$82,000.00	\$254,000.00	\$65,000.00	\$189,000.00	\$1.06
City of Ely*		11,500.00			4,910.00	2,400.00	18,810.00	12,800.00	6,010.00	
Special districts		13,212.50			29,060.00	30,240.25	72,512.75		75,512.75	
Totals	\$18,000,000.00	\$128,212.50	\$16,000.00	\$38,000.00	\$49,470.00	\$114,640.25	\$346,322.75	\$77,800.00	\$268,522.75	
Grand totals	\$183,241,064.00	\$1,319,596.96	\$200,566.96	\$562,296.53	\$489,648.04	\$1,146,606.13	\$3,696,644.83	\$810,852.46	\$2,887,792.37	

NOTE—The City of Ely, having published no budget for the year 1918, the figures used are the same as in 1917.

TABLE No. 6
Assessed Valuations of Railroads and Public Utilities, 1917-1918

INTERSTATE AND INTERCOUNTY RAILROADS

Name of railroad	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Central Pacific Railway.....	744.779	978.399	\$48,025,145	\$38,722,631	\$34,420,116
Tonopah and Goldfield Railroad.....	95.063	113.219	1,912,872	1,721,185	1,736,000
Nevada Northern Railway.....	167.896	195.90	5,041,627	4,537,464	3,847,973
Los Angeles and Salt Lake R. R.....	286.94	324.18	11,444,400	10,299,960	9,052,800
Tonopah and Tidewater Railroad.....	29.47	29.98	142,300	128,070	118,840
Bullfrog and Goldfield Railroad.....	78.95	84.53	879,295	341,965	318,887
Las Vegas and Tonopah Railroad.....	117.43	123.58	587,150	528,435	470,480
Virginia and Truckee Railway.....	67.00	85.07	1,000,000	900,000	800,000
Atchison, Topeka and Santa Fe Ry.....	11.60	12.59	67,697	60,900	54,134
Western Pacific Railway.....	449.20	501.69	14,380,460	12,897,414	*10,538,520
Totals.....	2,028.306	2,449.078	\$77,990,416	\$70,137,374	\$61,847,750

*Including Reno branch assessed to Nevada-California-Oregon Railway.

INTRACOUNTY RAILROADS

Name of railroad	Main track mileage	All track mileage	Full cash value	Assessed 1918	Assessed 1917
Eureka-Nevada Railway.....	85.60	88.10	\$161,194	\$145,075	\$132,571
Nevada Central Railroad.....	93.00	95.00	125,000	112,500	100,000
Silver Peak Railroad.....	17.50	19.00	47,112	42,400	37,690
Nevada Copper Belt Railroad.....	41.47	44.47	250,000	225,000	200,000
Pioche-Pacific Railroad.....	15.00	17.50	25,000	22,500	20,000
Totals.....	252.57	264.07	\$608,306	\$547,475	\$490,261

INTERCOUNTY AND INTERSTATE PUBLIC UTILITIES

Class	Full cash value	Assessed 1918	Assessed 1917
Sleeping-car companies.....	\$805,941	\$725,346	\$666,665
Private car-line companies.....	586,728	528,063	430,424
Express companies.....	231,985	208,785	362,990
Electric companies.....	4,888,279	4,399,450	3,572,122
Telephone and telegraph companies.....	2,314,724	2,083,250	1,716,417
Water companies.....	216,600	194,850	250,470
Totals.....	\$9,044,157	\$8,139,734	\$7,299,088

INTRACOUNTY PUBLIC UTILITIES

Class	Full cash value	Assessed 1918	Assessed 1917
Electric and gas companies.....	\$1,148,457	\$1,038,612	\$897,918
Telephone and telegraph companies.....	147,118	132,407	117,694
Electric railroads.....	83,333	75,000	93,334
Water companies.....	1,632,372	1,469,134	1,308,654
Totals.....	\$3,011,280	\$2,710,153	\$2,417,600

RECAPITULATION

Class	Full cash value	Assessed 1918	Assessed 1917
Interstate and intercounty railroads.....	\$77,930,416	\$70,137,374	\$61,347,750
Intracounty railroads.....	608,306	547,475	490,261
Totals	\$78,538,722	\$70,684,849	\$61,838,011
Interstate and intercounty public utilities	\$9,044,157	\$8,189,734	\$7,299,088
Intracounty public utilities.....	3,011,280	2,710,153	2,417,600
Totals	\$12,055,437	\$10,849,887	\$9,716,688
Grand totals.....	\$90,594,159	\$81,534,736	\$71,554,699

TABLE No. 7
Detailed Statement of Lands in Private Ownership, by Classes and Counties

County	Cultivated—1st class			Cultivated—2d class			Cultivated—3d class			Cultivated—4th class		
	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation
Churchill	5,623	\$55.80	\$313,768	12,862	\$44.24	\$568,697	3,388	\$33.89	\$114,810	478	\$23.48	\$11,223
1917	5,980	82.83	81,604	13,885	59.10	811,102	8,593	46.00	370,360	2,247	31.50	70,761
1918				13,885	59.10	811,102	8,593	46.00	370,360	2,247	31.50	70,761
Clark				1,000	65.00	18,389	1,848	40.87	75,624	1,697	21.71	36,850
1917				1,000	65.00	18,389	1,848	40.87	75,624	1,697	21.71	36,850
1918				1,000	65.00	18,389	1,848	40.87	75,624	1,697	21.71	36,850
Douglas	3,321	80.00	265,680	3,567	64.00	228,904	4,973	65.00	325,104	1,438	32.00	46,024
1917	3,341	80.00	266,880	3,567	64.00	228,904	4,973	65.00	325,104	1,438	32.00	46,024
1918	3,341	80.00	266,880	3,567	64.00	228,904	4,973	65.00	325,104	1,438	32.00	46,024
Elko	492	80.00	39,360	4,567	65.00	296,206	8,868	64.00	567,616	17,876	32.00	571,786
1917	492	80.00	39,360	4,567	65.00	296,206	8,868	64.00	567,616	17,876	32.00	571,786
1918	492	80.00	39,360	4,567	65.00	296,206	8,868	64.00	567,616	17,876	32.00	571,786
Esmeralda	66	80.00	5,280	90	58.00	5,220	295	54.25	1,605	777	34.94	27,067
1917	66	80.00	5,280	90	58.00	5,220	295	54.25	1,605	777	34.94	27,067
1918	66	80.00	5,280	90	58.00	5,220	295	54.25	1,605	777	34.94	27,067
Eureka	104	80.00	8,320				225	54.25	1,605	2,112	30.85	64,872
1917	104	80.00	8,320				225	54.25	1,605	2,112	30.85	64,872
1918	104	80.00	8,320				225	54.25	1,605	2,112	30.85	64,872
Humboldt	1,231	80.00	98,480	80	71.50	5,720	180	55.00	9,900	1,443	39.50	57,198
1917	1,231	80.00	98,480	80	71.50	5,720	180	55.00	9,900	1,443	39.50	57,198
1918	1,231	80.00	98,480	80	71.50	5,720	180	55.00	9,900	1,443	39.50	57,198
Lander	2,701	90.00	243,090	12,375	65.00	804,375	6,547	50.00	327,377	12,707	35.00	445,198
1917	48	80.00	3,400	12,375	65.00	804,375	6,547	50.00	327,377	12,707	35.00	445,198
1918	48	80.00	3,400	12,375	65.00	804,375	6,547	50.00	327,377	12,707	35.00	445,198
Lincoln	7	90.00	630	155	65.00	10,075	5	50.00	250	2,823	30.00	78,678
1917	7	90.00	630	155	65.00	10,075	5	50.00	250	2,823	30.00	78,678
1918	7	90.00	630	155	65.00	10,075	5	50.00	250	2,823	30.00	78,678
Lyon	1,813	80.00	145,040	37	65.00	2,405	314	44.00	13,816	1,069	30.00	32,770
1917	1,813	80.00	145,040	37	65.00	2,405	314	44.00	13,816	1,069	30.00	32,770
1918	1,813	80.00	145,040	37	65.00	2,405	314	44.00	13,816	1,069	30.00	32,770
Mineral	1,888	80.10	111,179	11,233	58.00	651,614	5,446	44.00	239,624	4,781	30.00	142,830
1917	1,888	80.10	111,179	11,233	58.00	651,614	5,446	44.00	239,624	4,781	30.00	142,830
1918	1,888	80.10	111,179	11,233	58.00	651,614	5,446	44.00	239,624	4,781	30.00	142,830
Nye	230	90.00	20,745	9,818	57.85	567,971	8,820	44.50	392,480	3,420	31.15	106,533
1917	230	90.00	20,745	9,818	57.85	567,971	8,820	44.50	392,480	3,420	31.15	106,533
1918	230	90.00	20,745	9,818	57.85	567,971	8,820	44.50	392,480	3,420	31.15	106,533
Ormsby	202	85.00	17,170	316	65.00	20,207	1,073	44.00	47,212	1,000	35.00	35,000
1917	202	85.00	17,170	316	65.00	20,207	1,073	44.00	47,212	1,000	35.00	35,000
1918	202	85.00	17,170	316	65.00	20,207	1,073	44.00	47,212	1,000	35.00	35,000
Storey	367	90.00	33,030	618	65.00	40,267	1,162	50.00	58,100	1,697	30.00	50,010
1917	367	90.00	33,030	618	65.00	40,267	1,162	50.00	58,100	1,697	30.00	50,010
1918	367	90.00	33,030	618	65.00	40,267	1,162	50.00	58,100	1,697	30.00	50,010
Washoe	124	90.00	11,160	132	65.00	8,548	1,108	65.00	6,686	1,398	50.00	69,830
1917	124	90.00	11,160	132	65.00	8,548	1,108	65.00	6,686	1,398	50.00	69,830
1918	124	90.00	11,160	132	65.00	8,548	1,108	65.00	6,686	1,398	50.00	69,830
White Pine	7,992	83.48	667,151	363	75.00	27,225	130	50.00	6,500	1,228	35.00	42,925
1917	7,992	83.48	667,151	363	75.00	27,225	130	50.00	6,500	1,228	35.00	42,925
1918	7,992	83.48	667,151	363	75.00	27,225	130	50.00	6,500	1,228	35.00	42,925
Totals	21,249	\$74.95	\$1,692,649	55,060	\$63.49	\$2,944,399	387	\$43.15	\$1,196,061	58,499	\$30.43	\$1,719,500
1918	13,825	88.47	1,223,039	54,391	62.06	3,375,338	40,046	47.82	1,914,923	57,851	34.77	2,011,699

TABLE No. 7—Continued

County	Meadow or wild hay—1st class				Meadow or wild hay—2d class				Meadow or wild hay—3d class				Meadow or wild hay—4th class			
	Acres	Per acre	Valuation		Acres	Per acre	Valuation		Acres	Per acre	Valuation		Acres	Per acre	Valuation	
Churchill	1917 1918 1919	290 8	\$23.31 27.00	\$6,527 216	892 500	\$20.17 16.20	\$17,794 8,100									
Clark	1917 1918				56	18.00	1,008									
Douglas	1917 1918	2,077 1,685	48.00 50.00	99,686 84,250	1,794 2,064	32.00 30.00	57,408 61,920									
Elko	1917 1918	87,715	30.34	2,661,448	350	18.00	6,300		104,816	25.00	2,630,400					
Esmeralda	1917 1918				320	20.25	6,480		50	25.00	1,250		385	\$17.50	\$5,862	
Eureka	1917 1918	1,155	83.00	96,115	7,534	19.80	149,173		133	25.00	3,325		7,545	17.50	132,037	
Humboldt	1917 1918	8,652	30.00	255,560	31,688	18.00	570,382		2,120	25.00	53,000		39,019	17.50	682,832	
Lander	1917 1918	10	36.00	360	4,651	18.00	83,718		16	25.00	400		4,186	17.50	73,256	
Lincoln	1917 1918	181	35.00	6,317	1,260	23.00	28,980		1,260	25.00	31,487					
Lyon	1917 1918	65	28.70	1,735	1,220	32.00	3,904		1,231	25.00	30,775					
Mineral	1917 1918	1,899	30.38	57,700	1,788	17.80	31,826		1,580	25.00	39,500					
Nye	1917 1918	2,782	30.00	81,960	2,951	18.00	53,118		3,296	25.00	82,400		2,198	17.50	38,465	
Ormsby	1917 1918	115	48.00	5,520	148	32.00	4,776									
Storey	1917 1918															
Washoe	1917 1918	6,064	51.10	309,872	4,983	38.34	194,044									
White Pine	1917 1918	1,800	30.00	54,000	2,826	18.00	50,868		5,319	25.00	132,975		1,087	17.50	18,497	
Totals	1917 1918	8,636 111,577	\$49.39 30.61	\$421,615 3,415,911	8,102 56,488	\$35.00 18.51	\$283,438 1,049,178		119,771 12	\$25.00 18.00	\$2,994,262 216		64,340	\$17.50	\$950,949	

REPORT OF NEVADA TAX COMMISSION

TABLE No. 7—Continued

County	Pasture—1st class			Pasture—2d class			Pasture—3d class			Pasture—4th class		
	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation
Churchill	1,603	\$16.91	\$27,112	8,697	\$11.37	\$38,964	7,819	\$9.90	\$77,408	1,907	\$6.30	\$12,014
Clark				665	18.00	11,220						
				413	15.00	6,195						
	76	30.00	2,250	300	20.00	6,000	449	11.00	4,989	139	7.00	978
Douglas	4,622	32.00	144,704	6,947	24.00	166,728	6,900	12.00	82,800			
	5,039	30.00	151,170	7,469	20.00	149,380	6,132	11.00	67,462	100	7.00	700
Elko							97,603	12.50	1,220,087			
				225	20.00	4,500	114,690	15.00	1,720,350			
Esmeralda							114,874	12.50	10,925			
										687	7.87	5,253
Eureka							46,138	12.50	564,225			
	1,165	33.00	38,115	5,421	22.00	119,262	17,504	12.10	211,796	220	7.70	1,694
Humboldt							25,038	12.50	312,975	45,556	7.50	341,662
	16	30.00	480	60	20.00	1,200	35,534	11.00	390,878	40,885	7.00	285,896
Lander							12,480	12.50	156,003	5,123	7.50	38,423
				100	20.00	2,000	3,043	11.00	33,473	23,231	7.00	162,617
Lincoln				863	15.00	6,445	2,834	12.50	35,425			
				863	17.00	6,171	2,834	14.00	39,676			
Lyon	2,989	20.00	59,380	7,297	15.00	109,455	16,807	12.50	210,067			
	1,384	26.70	51,638	24,884	13.35	332,202						
Mineral							1,680	12.50	21,000			
				1,640	20.00	32,800						
Nye							6,601	9.60	63,370	6,390	4.62	29,014
	60	30.00	1,800	1,742	20.00	34,840	1,994	11.00	21,964	3,225	7.00	22,574
Ormsby	218	20.00	4,360	317	15.00	4,755						
	161	30.00	4,830	350	20.00	7,000						
Storey	6	20.00	130							20	7.00	140
				18	20.55	370						
Washoe	5,103	33.53	171,125	14,199	23.81	333,045						
	10,377	30.00	311,820	6,143	20.00	102,960	1,407	11.00	15,477	5,465	7.00	38,262
White Pine							2,513	12.50	31,225	1,110	7.50	8,325
				1,700	20.00	34,000	6,124	11.00	67,364			
Totals	14,421	\$23.21	\$408,811	38,233	\$19.08	\$729,487	213,773	\$12.40	\$2,712,072	53,038	\$7.19	\$417,494
	15,817	23.56	561,603	50,045	16.86	843,935	197,580	13.42	2,660,749	70,810	6.99	530,063

TABLE No. 7—Continued

County	Arable—1st class			Arable—2d class			Arable—3d class			Arable—4th class		
	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation
Churchill.....	4,437	\$19.25	\$85,408	7,194	\$14.36	\$103,274	9,760	\$10.38	\$101,266			
Clark.....	1,785	18.00	32,190	10,461	13.60	141,223	7,763	9.00	69,967			
Clark.....	15,063	10.80	162,667	37,743	6.02	168,818	68,827	2.91	198,663			
Douglas.....	1,000	20.00	20,000	1,500	10.00	15,000	110,852	4.53	502,017			
Douglas.....	8,186	4.80	36,832									
Elko.....	5,546	4.80	24,967									
Elko.....	2,069	8.00	16,472							2,784	\$6.86	\$19,096
Esmeralda.....												
Eureka.....	425	10.00	4,250									
Eureka.....	2,944	18.06	53,175	6,000	11.00	66,000	435	5.50	2,393			
Humboldt.....	4,838	21.61	104,547	5,223	11.46	67,946	22,352	6.25	129,319			
Lander.....				4,660	12.85	60,013	16,940	6.61	177,400	32,375	3.00	\$97,126
Lander.....				109	12.00	1,304	12,373	6.00	74,241			
Lincoln.....				30	10.00	300						
Lincoln.....				36	14.00	504						
Lyon.....	6,978	10.00	69,780	24,926	7.50	187,830	17,633	5.00	58,440			
Mineral.....	711	25.00	17,775	10,502	13.00	137,830	33,082	10.00	330,820			
Mineral.....				220	5.00	1,100						
Nye.....	150	30.00	4,500				614	6.38	4,222			
Nye.....	987	10.00	9,870	53	8.00	424	239	7.00	2,096			
Ormsby.....	490	15.00	7,350	909	7.50	4,780	587	5.00	2,935			
Storey.....	17.5	2.50	44			9,080	865	7.50	6,487			
Storey.....				17	2.64	45						
Washoe.....	1,598	11.10	17,741	2,449	9.01	22,063	655	5.35	2,809			
White Pine.....	223	7.00	1,561									
Totals.....	40,857.5	\$10.83	\$442,418	69,226	\$9.01	\$554,605	132,206	\$4.56	\$602,355	2,784	\$6.86	\$19,096
	16,679	13.74	227,731	34,412	13.13	451,681	169,836	6.01	1,021,180	32,375	3.00	\$97,126

*Lien lands.

REPORT OF NEVADA TAX COMMISSION

TABLE No. 7—Continued

County	Grazing—1st class			Grazing—2d class			Grazing—3d class			Grazing—4th class		
	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation
Churchill.....	494	\$13.91	\$6,874	6,238	\$9.01	\$56,631	7,567	\$4.50	\$34,062	2,386	\$2.70	\$6,442
Clark.....	120	13.50	1,270	4,969	9.00	41,351						
Clark.....	168	8.57	1,440									
Douglas.....	4,324	2.00	10,835	110	10.00	1,100	6,740	5.00	\$3,700			
Elko.....	30	15.00	450	6,112	1.76	10,686	743	5.00	3,715	4,167	3.00	12,501
Elko.....				300	10.00	3,000						
Elko.....				557,006	4.00	2,228,024						
Esmeralda.....				858	7.68	6,544	349,537	5.00	1,747,686	283,273	3.00	849,821
Eureka.....							1,130	5.63	6,337	220	3.37	743
Eureka.....				70,709	4.00	282,936	15,556	3.25	50,557			
Humboldt.....	180	16.50	2,970	1,590	11.00	17,490	69,090	3.50	979,940	22,838	3.30	75,366
Humboldt.....				34,738	4.00	138,952	303,836	3.25	1,003,717			
Lander.....				45	10.00	450	138,688	5.00	693,316	222,593	2.15	473,224
Lander.....				16,339	4.00	65,357				13,041	2.50	32,602
Lincoln.....	80	15.00	1,200	143	10.00	1,430	26,339	5.00	131,495	15,534	3.00	46,802
Lincoln.....							9,421	3.25	30,618			
Lyon.....				6,315	2.50	17,043				9,876	3.65	36,047
Mineral.....	160	5.00	800				11,245	5.00	56,225	7,684	2.50	19,210
Nye.....				300	10.00	3,000	416	5.00	2,080	160	4.00	640
Nye.....				79,438	3.25	258,336	29,961	2.50	74,902			
Ormsby.....	1,331	5.00	6,655	1,244	3.25	4,043	6,506	4.00	26,024	75,292	3.75	283,585
Storey.....	310	15.00	4,650	800	10.00	8,000	4,175	5.00	20,875	7,181	3.00	21,543
Storey.....				386	4.00	1,540						
Washoe.....	8,657	7.91	68,443	50	10.30	540	320	5.00	1,600	170	3.00	510
Washoe.....	1,125	-15.00	16,875	271,589	2.30	761,845						
White Pine.....				3,317	10.00	33,170	44,449	6.00	266,694	127,377	3.00	382,133
White Pine.....							82,206	3.25	267,170	1,427	2.50	3,567
White Pine.....	1,460	15.00	21,900							62,972	3.00	189,917
Totals.....	16,144	\$6.27	\$95,047	1,051,541	\$3.65	\$3,631,397	445,980	\$3.20	\$1,426,964	14,468	\$2.50	\$36,189
Totals.....	3,245	15.35	48,915	11,259	9.74	109,621	696,945	5.10	3,404,039	844,636	2.86	2,412,263

TABLE No. 7—Continued

County	Grazing—5th class			Mountain or Barren			Special (over \$90 per acre)			Unclassified		
	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation
Churchill	1917			17,700	\$4.77	\$84,343						
	1918	1,831	\$1.80	\$2,396	9,372	1.25	11,715					
Clark	1917			11,894	1.373	16,302				5,696	\$5.00	\$28,515
	1918			11,243	1.25	14,078	156	\$100.00	\$15,600			
Douglas	1917			109,054	1.25	136,567				3,513	5.13	18,185
	1918	7,340	2.00	14,680	113,134	1.75	197,984					
Elko	1917			518,125	2.00	1,036,250				4,290	10.00	42,900
	1918	448,161	2.50	1,120,402						300	12.50	3,750
Esmeralda	1917			12,272	2.10	25,825	2.05	608.27	1,250			
	1918			10,935	1.25	13,669	61.05	120.87	7,380			
Eureka	1917			1,231	1.25	1,601						
	1918	6,885	2.20	15,147	180	1.37	248					
Humboldt	1917			76,837	1.26	96,817						
	1918	53,354	2.00	106,708	993	1.25	1,229					
Lander	1917			12,958	1.25	16,198						
	1918	2,676	2.00	5,352	11,919	1.25	14,900					
Lincoln	1917			19,748	1.25	24,685						
	1918			20,773	1.25	25,965						
Lyon	1917			21,796	1.25	27,232						
	1918			36,067	1.25	45,084						
Mineral	1917			53,244	1.25	66,555						
	1918	314	2.50	785	53,579	1.25	66,972					
Nye	1917			5,483	1.36	7,496						
	1918	32,019	2.00	64,057	4,135	1.25	5,169			156	40.00	6,240
Ormsby	1917			24,941	2.14	53,357	5	100.00	500			
	1918	15,212	2.00	30,424			94	100.00	9,400			
Storey	1917			1,355	1.48	2,004						
	1918			1,006	1.37	1,387						
Washoe	1917			109,197	1.94	212,154				1,162	2.03	2,354
	1918	196,877	2.00	397,754	17,318	1.25	21,648	5,990	102.60	614,555		
White Pine	1917			66,608	1.25	70,759						
	1918	31,004	2.00	62,007	36,067	1.25	45,084					
Totals	1917			1,052,523	\$1.78	\$1,878,145	96.05	\$110.88	\$10,650	74,966	\$3.06	\$603,873
	1918	797,173	\$2.28	\$1,819,712	326,710	1.42	465,133	6,212.00	102.71	688,065	58,989	8.68

TABLE No. 7—Continued

RAILROAD LANDS

County		Grazing—2d class			Grazing—3d class			Grazing—4th class			Grazing—5th class		
		Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation
Churchill	1917												
	1918												
Clark	1917												
	1918												
Douglas	1917												
	1918												
Elko	1917	284,106	\$4.00	\$1,066,424	96,263	\$5.00	\$481,319	388,358	\$3.00	\$1,150,076	744,065	\$2.00	\$1,488,131
Emeralda	1917												
	1918												
Eureka	1917	7,359	4.00	29,436	90,849	3.25	295,259						
	1918				7,359	5.00	36,795	90,889	3.00	272,607			
Humboldt	1917				77,398	3.25	251,543						
	1918							92,177	3.00	276,531			
Lander	1917				60,578	3.25	196,875						
	1918				1,126	5.00	5,632	60,578	3.50	212,025			
Lincoln	1917												
	1918												
Lyon	1917	63,650	2.50	159,125							68,318	2.50	170,795
	1918												
Mineral	1917												
	1918												
Nye	1917												
	1918												
Ormsby	1917												
	1918												
Storey	1917							900	3.00	2,700	1,210	2.00	2,420
	1918										43,870	2.00	87,740
Washoe	1917												
	1918												
White Pine	1917												
	1918												
Totals	1917	335,115	\$3.72	\$1,244,985	928,825	\$3.25	\$743,677	637,139	\$3.04	\$1,941,856	944,772	\$2.04	\$1,923,704
	1918				106,356	5.00	531,786						

TABLE NO. 7—Continued

RAILROAD LANDS

County	Patented			Unpatented			Mountain or Barren			Townsite		
	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation	Acres	Per acre	Valuation
Churchill	288,160	\$2.67	\$770,826	112,772	\$1.34	\$153,724						\$9,555
Clark	287,748	2.31	809,230	186,490	1.41	260,847						9,566
Clark	1917											
Clark	1918											
Clark	1919											
Douglas	1917											
Douglas	1918											
Elko	1917											
Elko	1918			2,932	1.25	3,660	936,900	\$1.76	\$1,639,576			
Elko	1919											
Emeralda	1917											
Emeralda	1918											
Eureka	1917											
Eureka	1918						115,645	1.25	144,558			
Eureka	1919						115,645	1.25	144,558			
Humboldt	1917						1,390,276	1.25	1,737,846			
Humboldt	1918						1,390,276	1.25	1,737,846			
Humboldt	1919						1,390,276	1.25	1,737,846			
Lander	1917						1,394,724	1.25	1,708,904			25,146
Lander	1918						147,879	1.25	184,849			28,270
Lander	1919						147,879	1.25	184,849			
Lincoln	1917						142,129	1.25	177,662	441	\$10.00	4,410
Lincoln	1918											
Lyon	1917						39,063	1.25	48,829			2,000
Lyon	1918						39,063	1.25	48,829			1,860
Mineral	1917											
Mineral	1918											
Nye	1917											
Nye	1918											
Nye	1919											
Ormsby	1917						2,110	2.00	4,220			
Ormsby	1918											
Storey	1917	41,130	1.60	31,548	1.40	44,167						
Storey	1918		65,868									
Washoe	1917						28,858	1.25	36,073			
Washoe	1918						147,244	1.34	196,933			
Washoe	1919						135,039	1.25	168,798			
White Pine	1917											
White Pine	1918											
Totals	329,340	\$2.54	\$836,714	183,272	\$1.35	\$206,581	2,779,117	\$1.42	\$3,956,309	441	\$99.97	\$36,701
1918	287,748	2.81	809,230	186,490	1.41	260,847	1,825,148	1.25	2,281,434			44,086

TABLE No. 8

Comparative Statement of Privately Owned Lands of the State of Nevada as a Whole by Classes for Years 1917-1918

Class	Acres	Average per acre	Valuation
Cultivated—1st class	1917 21,249	\$74.96	\$1,592,649
	1918 18,825	88.47	1,223,039
Cultivated—2d class	1917 55,060	53.49	2,944,399
	1918 54,391	62.06	3,375,338
Cultivated—3d class	1917 27,717	48.15	1,196,061
	1918 40,046	47.82	1,914,923
Cultivated—4th class	1917 56,499	30.48	1,719,500
	1918 57,851	34.77	2,011,699
Meadow—1st class	1917 8,536	49.39	421,615
	1918 111,577	30.61	3,415,911
Meadow—2d class	1917 8,102	35.00	283,488
	1918 55,488	18.91	1,049,178
Meadow—3d class	1917 119,771	25.00	2,994,282
	1918 12	18.00	216
Meadow—4th class	1917 54,340	17.50	950,949
	1918		
Pasture—1st class	1917 14,421	28.21	406,811
	1918 18,817	29.85	561,608
Pasture—2d class	1917 38,233	19.08	729,487
	1918 50,045	16.86	843,985
Pasture—3d class	1917 218,773	12.40	2,712,072
	1918 197,530	13.42	2,650,749
Pasture—4th class	1917 58,068	7.19	417,424
	1918 75,810	6.99	530,063
Arable—1st class	1917 40,857	10.83	442,418
	1918 16,579	13.74	227,731
Arable—2d class	1917 69,226	8.01	554,605
	1918 34,412	13.13	451,691
Arable—3d class	1917 132,206	4.56	602,385
	1918 169,836	6.01	1,021,180
Arable—4th class	1917 2,784	6.86	19,068
	1918 32,376	3.00	97,126
Grazing—1st class	1917 15,144	6.27	95,047
	1918 3,245	15.35	49,915
Grazing—2d class	1917 1,051,541	3.65	3,831,397
	1918 11,259	9.74	109,621
Grazing—3d class	1917 445,980	3.20	1,426,964
	1918 666,945	5.10	3,404,089
Grazing—4th class	1917 14,468	2.50	36,169
	1918 844,698	2.86	2,412,293
Grazing—5th class	1917		
	1918 797,173	2.23	1,819,712
Mountain—One class only	1917 1,052,523	1.78	1,878,145
	1918 326,710	1.42	465,133
Special—Over \$90 per acre	1917 96	110.88	10,650
	1918 6,212	102.71	638,085
Unclassified	1917 74,966	8.06	603,873
	1918 54,829	9.84	539,679
Totals	1917 3,580,550	\$7.22	\$25,869,418
	1918 3,639,665	7.92	28,811,809

TABLE No. 9

Comparative Statement of Railroad Lands for the State as a Whole by Classes
for 1917-1918

Classes	Acres	Average per acre	Valuation
Arable—1st class	1917 2,284	\$18.32	\$41,889
.....	1918 2,445	21.50	52,552
Arable—2d class	1917 43,435	7.69	334,066
.....	1918 31,982	8.38	268,068
Arable—3d class	1917 70,374	5.63	398,969
.....	1918 70,403	7.01	493,223
Arable—4th class	1917 53,464	1.64	87,419
.....	1918 .....	.....	.....
Grazing—1st class	1917 .....	.....	.....
.....	1918 .....	.....	.....
Grazing—2d class	1917 335,115	3.72	1,244,965
.....	1918 .....	.....	.....
Grazing—3d class	1917 228,825	3.25	743,677
.....	1918 106,356	5.00	531,786
Grazing—4th class	1917 .....	.....	.....
.....	1918 637,189	3.04	1,941,856
Grazing—5th class	1917 .....	.....	.....
.....	1918 944,772	2.04	1,923,704
Mountain—One class only	1917 2,779,117	1.42	3,956,809
.....	1918 1,825,148	1.25	2,281,434
Patented	1917 329,340	2.54	836,714
.....	1918 287,748	2.81	809,290
Unpatented	1917 153,272	1.35	206,581
.....	1918 185,490	1.41	260,847
Townsite	1917 .....	.....	.....
.....	1918 441	99.97	44,065
Totals	1917 3,995,226	\$1.97	\$7,877,760
.....	1918 4,091,974	2.08	8,606,845

TABLE No. 10

Recapitulation of All Lands of the State of Nevada as a Whole by Classes for Years 1917-1918

Class	Acres	Average per acre	Valuation
Cultivated—1st class	1917 21,249	\$74.95	\$1,592,649
.....	1918 13,825	88.47	1,223,039
Cultivated—2d class	1917 55,060	53.49	2,944,399
.....	1918 54,391	62.06	3,375,338
Cultivated—3d class	1917 27,717	43.15	1,196,061
.....	1918 40,046	47.82	1,914,923
Cultivated—4th class	1917 56,499	30.43	1,719,500
.....	1918 57,851	34.77	2,011,699
Meadow—1st class	1917 8,536	49.39	421,615
.....	1918 111,577	30.61	3,415,911
Meadow—2d class	1917 8,102	35.00	283,438
.....	1918 55,488	18.91	1,049,178
Meadow—3d class	1917 119,771	25.00	2,994,262
.....	1918 12	18.00	216
Meadow—4th class	1917 54,340	17.60	960,949
.....	1918 .....	.....	.....
Pasture—1st class	1917 14,421	28.21	406,811
.....	1918 18,817	29.85	561,608
Pasture—2d class	1917 38,233	19.08	729,487
.....	1918 50,045	16.86	843,935
Pasture—3d class	1917 218,773	12.40	2,712,072
.....	1918 197,530	13.42	2,650,749
Pasture—4th class	1917 58,068	7.19	417,424
.....	1918 75,810	6.99	530,063
Arable—1st class	1917 43,141	11.22	484,257
.....	1918 19,024	14.73	280,253
Arable—2d class	1917 112,661	7.89	888,671
.....	1918 66,394	10.84	719,759
Arable—3d class	1917 202,580	4.89	991,354
.....	1918 240,239	6.30	1,514,403
Arable—4th class	1917 56,248	1.89	106,517
.....	1918 32,375	3.00	97,126
Grazing—1st class	1917 15,144	6.27	95,047
.....	1918 3,245	15.35	49,915
Grazing—2d class	1917 1,396,656	3.66	5,076,382
.....	1918 11,259	9.74	109,621
Grazing—3d class	1917 674,805	3.22	2,170,641
.....	1918 773,301	5.08	3,935,825
Grazing—4th class	1917 14,463	2.50	36,169
.....	1918 1,481,887	2.94	4,354,149
Grazing—5th class	1917 .....	.....	.....
.....	1918 1,741,945	2.15	3,743,416
Mountain—One class only	1917 3,831,640	1.52	5,834,954
.....	1918 2,151,853	1.28	2,746,567
Special—Over \$90 per acre	1917 96	110.88	10,650
.....	1918 6,212	102.71	638,095
Unclassified	1917 74,966	8.06	603,873
.....	1918 54,829	9.84	539,679
Patented	1917 329,340	2.54	836,714
.....	1918 287,748	2.81	809,290
Unpatented	1917 153,272	1.35	206,581
.....	1918 185,490	1.41	260,847
Townsite	1917 .....	.....	.....
.....	1918 441	99.97	36,701
Totals	1917 7,575,776	\$4.45	\$33,747,178
.....	1918 7,731,689	4.84	37,418,654

TABLE No. 11
Comparative and Detailed Statement of Live Stock, by Classes and Counties, 1917-1918

County	Cattle			Burros			Jacks			Jennies		
	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per head	Valuation
Churchill	1917	8,839	\$36.00	28	\$10.71	\$300	12	\$145.83	\$1,750	34	\$25.00	\$850
	1918	8,151	38.11	29	10.00	290	10	135.00	1,350	30	24.08	721
	1917	1,267	36.00									
	1918	2,188	38.03									
Douglas	1917	10,861	36.00	3	10.00	30	1	50.00	50			
	1918	12,106	38.00				1	75.00	75			
	1917	103,179	36.04	108	20.00	2,060	19	155.00	2,945			
	1918	83,160	38.19	108	20.00	2,160	20	150.00	3,000	3	20.00	60
Esmeralda	1917	1,729	36.00									
	1918	1,655	38.00									
	1917	11,861	36.00	46	10.00	460	4	107.50	430			
	1918	12,814	38.00	42	10.00	420	2	100.00	200			
Humboldt	1917	55,236	36.00	115	10.00	1,150	3	106.66	320			
	1918	62,848	38.00	85	10.00	850	6	279.20	1,675			
	1917	13,629	36.00	31	9.03	280	8	93.75	750	9	15.00	135
	1918	14,204	38.00	33	8.48	280	9	100.00	900	10	9.00	90
Lincoln	1917	13,436	36.00	16	5.00	80	3	133.00	400			
	1918	13,601	38.00	7	7.86	55	4	200.00	800			
	1917	9,773	36.00	9	15.00	135						
	1918	9,751	38.00	8	15.00	120						
Mineral	1917	2,980	36.00	18	10.00	180	3	100.00	300			
	1918	2,780	38.95	10	10.00	100	3	100.00	300			
	1917	24,318	36.00	17	5.00	85	1	50.00	50			
	1918	24,801	38.00									
Ormsby	1917	495	36.00									
	1918	543	38.07									
	1917	111	36.00									
	1918	96	55.55									
Washoe	1917	17,640	36.00	71	17.25	1,225	6	175.00	1,050			
	1918	21,412	38.00	64	18.00	1,152	5	136.00	680			
	1917	9,114	36.00	37	5.86	217	2	175.00	350			
	1918	8,554	38.00	47	6.06	285	1	200.00	200			
Totals	1917	284,353	\$36.01	494	\$12.55	\$6,202	62	\$135.40	\$8,395	43	\$22.90	\$985
	1918	278,408	38.07	433	13.19	5,713	61	150.43	9,180		43	20.26	871

TABLE No. 11—Continued

County	Horses (Work)			Horses (Saddle)			Horses (Buggy)			Horses (Stock)		
	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per head	Valuation
Churchill	1917	990	\$73,600	98	\$50.00	\$4,900	43	\$50.00	\$2,150	1,768	\$30.00	\$53,040
	1,142	82.42	94,125	127	49.37	6,270	40	48.75	1,950	1,578	34.69	54,583
Clark	1917	943	80.00	49	50.00	2,450				98	30.00	2,940
	961	82.65	19,005	67	32.90	2,140				68	24.05	1,635
Douglas	1917	747	80.00	115	50.00	5,750	50	50.00	2,500	666	30.00	19,980
	715	74.06	52,950	118	47.68	5,615	33	40.75	1,345	569	48.61	27,600
Elko	1917	3,105	111.87	1,498	50.00	74,900	99	50.00	4,950	9,449	30.00	283,470
	2,882	104.35	300,735	1,684	54.82	94,250	112	70.00	7,840	7,333	36.02	265,855
Esmeralda	1917	83	6.640	23	50.00	1,150	68	50.00	3,400	57	30.00	1,710
	57	88.25	5,090	18	49.44	890	51	53.63	2,735	98	20.11	1,970
Eureka	1917	323	80.00	299	50.00	13,450				735	30.00	22,050
	306	80.00	24,480	264	40.00	10,160				694	15.27	10,567
Humboldt	1917	1,821	80.00	738	50.00	36,900	222	50.00	11,100	2,259	30.00	67,770
	2,160	90.00	194,400	847	54.97	46,563	161	29.84	8,855	2,854	33.00	94,190
Lander	1917	369	80.00	235	50.00	11,750				709	30.00	23,970
	506	80.00	40,480	241	50.00	12,050				724	30.00	21,720
Lincoln	1917	234	80.00	386	50.00	19,500				195	30.00	5,940
	253	90.17	18,720	340	55.00	16,500				194	25.35	4,910
Lyon	1917	1,177	80.94	149	82.33	7,797	101	60.00	6,060	744	32.87	24,280
	1,060	80.00	92,000	162	50.00	8,100	83	60.00	4,980	719	30.00	21,570
Mineral	1917	216	80.00	98	30.00	3,400	28	60.00	1,400	195	30.00	5,850
	196	89.72	17,280	43	35.84	1,560	10	10.00	100	195	30.00	5,850
Nye	1917	644	80.00	484	50.00	21,500	7	60.00	420	300	30.00	9,000
	505	73.34	39,845	485	50.85	25,505	8	1.85	148	592	30.00	17,765
Ormsby	1917	170	80.00	31	50.00	1,505	36	50.00	1,800	89	30.00	2,670
	102	80.00	8,160	12	50.42	600	38	50.00	1,900	94	30.00	2,820
Storey	1917	16	8.080	10	50.00	500	34	50.00	1,700			
	4	60.65	9,495	18	31.25	500	38	53.31	1,900			
Washoe	1917	1,635	80.00	319	31.25	15,950	33	50.00	1,650	1,561	30.00	46,880
	1,092	92.01	92,190	327	54.90	17,953	305	59.84	18,250	1,815	35.01	63,542
White Pine	1917	689	80.00	284	50.00	11,700	61	50.00	3,050	1,789	30.00	53,670
	721	69.75	50,265	217	49.52	9,445	45	50.55	2,275	880	12.75	11,220
Totals	1917	12,582	\$1,106,612	4,698	\$50.07	\$290,647	784	\$51.28	\$40,210	20,296	\$30.06	\$610,700
	1918	11,981	1,081,025	4,714	52.67	248,271	909	57.02	51,835	18,233	32.96	601,014

REPORT OF NEVADA TAX COMMISSION

TABLE No. 11—Continued

County	Stallions			Brood Mares			Mules (Work)			Mules (Stock)		
	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per head	Valuation
Churchill	15	\$326.66	\$4,900	31	\$106.67	\$3,400	226	\$90.00	\$18,060	308	\$30.00	\$9,240
Clark	19	273.70	5,200				108	82.96	8,545	167	35.68	5,959
	8	175.00	1,400				15	80.00	1,200			
Douglas	3	150.00	450	13	61.92	675	17	56.47	960			
Elko	4	125.00	500	36	59.86	2,155	38	80.00	3,040	12	30.00	360
	192	147.89	28,396				25	64.00	1,600	13	40.00	520
Esmeralda	170	150.91	25,655	50	60.00	3,000	91	80.00	9,010	183	30.00	5,490
	3	66.66	200				77	94.41	7,270	218	38.86	8,497
Eureka	2	100.00	200	18	60.00	900	8	80.00	640	2	30.00	60
	17	179.41	3,060	18	60.00	900	2	80.00	160	4	30.00	120
Humboldt	15	183.33	2,750	176	35.00	6,160	65	80.00	5,200	117	30.00	3,510
	55	184.73	10,160	104	37.50	3,900	54	80.00	4,320	63	32.54	2,050
	64	232.04	14,850				147	80.00	11,760	29	30.00	870
Lander	28	121.15	3,150	220	27.73	6,100	100	80.00	8,000	77	33.00	2,541
	25	100.00	2,500	170	30.00	5,100	48	80.00	3,840	62	32.50	1,860
Lincoln	9	200.00	1,800	128	42.00	5,375	42	80.00	3,360	43	30.00	1,290
	8	181.25	1,450	175	47.76	8,360	20	80.00	1,600	50	30.00	1,500
Lyon	8	262.50	2,100				60	82.50	4,950	71	33.82	2,401
	13	250.00	3,250				55	80.00	4,400	7	30.00	210
Mineral	3	100.00	300				45	80.00	3,600	19	30.00	570
	4	87.50	350				11	65.90	725			
Nye	17	106.82	1,850	72	41.66	3,000	102	80.00	8,160	24	43.33	1,040
	13	126.85	1,675	44	57.73	2,540	83	70.13	5,820	20	30.00	600
Ormsby	3	125.00	375				17	80.00	1,360	30	33.50	1,005
Storey	1917						2	80.00	160			
	1918						2	62.50	125			
Washoe	44	241.25	10,615	65	65.00	4,220	251	80.00	20,080			
	29	306.30	8,940	65	64.92	4,220	126	90.23	11,370	126	49.29	6,210
White Pine	17	186.25	3,200				160	80.00	12,800			
	11	197.72	2,175	178	6.14	920	64	53.67	3,435	8	20.00	160
Totals	412	\$171.25	\$70,546	723	\$41.36	\$29,831	1,296	\$90.00	\$106,400	800	\$30.00	\$24,000
	386	184.14	70,886	840	37.02	31,095	761	80.80	61,110	868	37.53	32,573

TABLE No. 11—Continued

County	Sheep			Bucks			Hogs			Pigs		
	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per head	Valuation
Churchill	44,287	\$8.00	\$354,236	961	\$10.00	\$9,610	1,073	\$10.00	\$10,730	383	\$3.00	\$1,149
Clark	26,732	9.00	241,088	502	12.00	6,024	897	12.00	10,764	394	4.02	1,584
	21	8.00	168				113	10.00	1,130	161	3.00	453
Douglas	33,218	8.00	265,744	115	10.00	1,150	132	12.00	1,584	124	4.00	496
	43,162	9.00	388,868	311	12.00	3,732	416	10.00	4,160	1,081	3.00	3,243
Elko	196,147	8.00	1,561,176	2,310	10.00	23,100	713	12.00	8,556	1,432	4.00	5,728
	192,645	9.00	1,732,905	2,707	12.00	32,484	860	10.00	8,600	1,650	3.00	4,950
Esmeralda	192,645	8.00	1,532,905	2	10.00	20	99	12.00	1,188	1,816	4.00	7,264
	58	9.00	522	2	12.00	24	70	10.00	700	339	3.00	1,017
Eureka	37,901	8.00	303,208	560	12.00	6,720	23	12.00	276	184	4.00	736
	36,160	9.00	325,860	1,905	10.00	19,050	89	12.00	1,068	15	3.00	45
Humboldt	149,919	8.00	1,199,352	1,905	12.00	22,860	1,133	10.00	11,330	949	3.00	2,847
	138,768	9.00	1,247,777	2,292	12.00	27,504	1,023	12.00	12,276	1,025	4.00	4,104
Lander	45,160	8.00	361,280				113	10.00	1,130	43	3.00	134
	46,210	9.00	415,890				123	10.00	1,230	46	4.00	184
Lincoln	16,800	8.00	134,400	200	10.00	2,000	123	12.00	1,476	231	3.00	693
	16,800	9.00	151,200	63	12.00	756	149	10.00	1,490	201	3.00	603
Lyon	32,590	8.00	260,720	963	10.00	9,630	1,113	12.00	13,356	2,301	3.00	6,904
	32,590	9.00	293,310	963	12.00	11,556	1,113	10.00	11,130	2,301	3.00	6,904
Mineral	37,906	8.00	303,208	111	12.00	1,332	137	12.00	1,644	136	3.00	408
	37,906	9.00	341,154	111	10.00	1,110	181	12.00	2,172	116	4.00	464
Nye	23,706	8.00	193,648	104	12.00	1,248	337	10.00	3,370	401	3.00	1,203
	23,706	9.00	213,354	104	10.00	1,040	337	12.00	4,044	401	4.00	1,604
Ormsby	27,755	8.00	222,040	278	12.00	3,336	325	12.00	3,900	626	3.00	1,878
	27,755	9.00	249,795				50	10.00	500	190	3.00	570
Storey	1,302	9.00	11,718				50	12.00	600	136	4.00	544
	1,302	8.00	10,416				21	10.00	210			
Washoe	157,798	8.00	1,262,394	2,705	10.00	27,050	13	12.00	156	20	4.00	80
	159,170	9.00	1,432,530	3,236	12.00	38,832	484	10.00	4,840	413	3.00	1,239
White Pine	101,849	8.00	814,792	1,197	10.00	11,970	615	12.00	7,380	248	4.00	992
	121,241	9.00	1,091,169	1,268	12.00	14,436	339	10.00	3,390	142	3.00	426
Totals	884,743	\$8.00	\$7,077,944	10,144	\$10.00	\$101,440	6,375	\$10.00	\$63,750	7,083	\$3.00	\$21,279
	911,442	9.00	8,201,109	11,504	12.00	138,048	6,210	12.00	74,384	6,892	4.01	26,448

TABLE No. 11—Continued

County	Chickens			Turkeys			Geese and Ducks			Stands of Bees		
	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per head	Valuation	No.	Per stand	Valuation
Churchill	11,365	\$0.40	\$4,546	1,497	\$1.00	\$1,497	43	\$0.74	\$32	1,207	\$3.00	\$3,621
Clark	11,198	.40	4,488	617	1.00	617	41	.78	32	1,022	3.50	3,577
Douglas	5,777	.40	2,191	44	1.00	44	38	.82	27	259	3.50	905
Elko	8,399	.40	3,359							499	3.00	1,497
Emeralda	9,401	.50	4,700							224	3.50	785
Esmeralda	230	.40	92							232	3.00	697
Eureka	230	.40	92							196	3.50	693
Humboldt	7,240	.40	2,896	72	1.00	72	31	.81	35	972	3.00	2,916
Lander	7,179	.45	3,231	36	1.30	47	36	1.09	39	1,186	3.50	4,161
Lincoln	1,013	.40	405	21	1.00	21	9	.85	6			
Lincoln	986	.40	394	9	1.00	9	4	1.00	4			
Lyon	200	.40	80									
Lyon	1918											
Mineral	803	.40	321	21	1.00	21	10	.80	6	2,055	3.00	6,165
Nye	2,795	.40	1,119	26	1.00	26	96	.54	26	2,895	3.50	10,097
Ormsby	2,837	.40	1,134	34	1.00	34	8	1.00	3	110	3.50	385
Ormsby	2,754	.40	1,106	14	1.00	14	17	.80	10	23	3.50	80
Storey	1,700	.40	680							57	3.50	190
Storey	1,731	.40	692							8	3.00	24
Washoe	14,549	.40	5,780							4	3.00	12
Washoe	18,467	.40	7,387							480	3.00	1,440
White Pine	2,786	.40	1,114	37	1.00	37	63	1.00	63	922	3.50	3,224
White Pine	2,087	.40	834	58	1.00	58	44	1.00	44			
Totals	59,311	\$0.40	\$23,699	1,734	\$1.00	\$1,734	280	.73	\$202	5,774	\$3.00	\$17,313
	48,738	.43	20,796	755	1.02	769	127	.95	121	6,963	3.50	24,014

TABLE No. 12
Recapitulation of Live Stock for the State as a Whole by Classes for the Years
1917-1918*

Class	Number of head	Value per head	Valuation
Cattle	284,353	\$36.01	\$10,240,978
Jacks	278,408	38.07	10,599,536
	62	135.40	8,386
Jennies	61	150.48	9,180
	43	22.90	966
	43	20.36	871
Horses, work	12,682	87.96	1,108,612
	11,961	87.72	1,061,025
Horses, saddle	4,606	60.07	280,647
	4,714	52.67	248,271
Horses, buggy	784	51.28	40,210
	909	57.02	51,836
Horses, stock	20,236	30.08	609,700
	18,253	32.96	601,114
Stallions	12,412	171.25	2,136,845
	886	184.14	163,185
Brood mares	723	41.28	29,851
	840	47.02	39,565
Mules, work	1,236	80.90	101,110
	761	80.80	61,600
Mules, stock	860	37.53	32,573
Sheep	884,743	8.00	7,077,944
	911,142	9.00	8,200,278
Bucks	10,144	10.00	101,440
	11,504	12.00	138,048
Hogs	6,375	10.00	63,750
	6,310	12.00	74,880
Pigs	7,083	3.00	21,279
	6,592	4.01	26,448
Chickens	59,311	.40	23,669
	48,738	.78	20,798
Ducks and geese	260	.96	252
	127	.78	121
Turkeys	1,734	1.00	1,734
	1,755	1.02	1,789
Burros	494	12.55	6,202
	453	13.19	5,713
Standards of bees	5,774	3.00	17,313
	6,983	3.50	24,014
Total			\$19,781,836
			21,248,797

*Exclusive of estimated uncollected livestock amounting to \$346,234 in 1917, and to \$767,920 in 1918.

TABLE No. 13
Comparative and Detailed Statement of Miscellaneous Properties, 1917-1918

County	Mine improve- ments and mills	Patented mining claims	*Net proceeds of mines	Town property, real	Town property, improvements	*Town property, personal	Country property, improvements	*Country property, personal
Churchill	\$64,760	\$110,500	\$199,855	\$293,207	\$349,285	\$75,953	\$349,989	\$144,084
Clark	64,100	103,000	171,860	236,872	382,902	94,866	381,425	166,083
1918	64,100	142,000	500,000	289,288	427,110	61,324	24,285	41,586
1917	183,705	132,840	228,922	236,863	449,384	82,832	21,518	21,518
Douglas	2,500	3,500	0	0	146,380	43,473	165,110	69,119
1918	79,530	165,463	200,000	0	182,350	39,872	184,880	43,473
Elko	179,145	386,377	108,940	783,052	970,507	27,960	489,933	154,603
1918	830,140	386,650	3,087	921,441	338,107	167,986	688,231	154,603
Emeralda	587,152	380,700	184,921	61,243	207,587	37,182	59,905	59,905
1917	2,500	101,500	13,074	19,342	71,955	27,386	6,400	6,400
Eureka	None reported	159,575	4,071	19,417	72,120	27,250	183,943	183,943
1918	263,210	149,500	100,000	615,208	821,046	72,875	817,358	137,357
Humboldt	371,295	156,000	100,000	692,535	1,019,259	97,247	282,585	161,850
1918	54,075	13,800	237,063	198,824	1,188,745	71,131	58,542	58,542
Lander	131,087	90,500	63,907	64,335	136,585	44,151	61,925	21,138
1918	140,395	201,875	300,000	71,315	142,300	47,969	31,540	34,408
Lincoln	158,400	212,625	73,903	100,687	137,500	40,798	35,250	34,208
1917	738,890	132,875	634,364	186,611	254,087	49,730	128,230	102,020
Lyon	768,865	32,875	929,490	202,875	251,355	76,830	145,245	228,169
1918	342,155	128,657	117,000	59,847	101,205	27,970	30,485	10,315
Mineral	213,115	114,583	143,882	48,043	85,698	42,044	32,895	14,800
1917	1,496,177	225,980	1,000,000	336,786	872,297	295,107	123,725	31,981
Nye	1,853,769	248,920	2,000,000	894,045	783,159	269,078	119,435	33,638
1918	23,475	500	500	197,381	783,159	269,078	44,173	9,047
Ormsby	650	500	1,805	232,770	442,609	94,697	11,408	11,088
1918	299,104	31,850	56,514	56,854	183,477	33,944	47,191	66,715
Storey	247,007	37,000	56,514	4,910,780	5,512,227	610,165	549,417	125,161
1918	18,210	23,590	11,543,965	5,351,535	5,298,050	81,075	374,920	65,892
Washoe	4,144,406	336,647	3,965,726	359,659	446,827	71,535	875,340	981,642
White Pine	4,156,981	336,647	3,965,726	359,659	446,827	71,535	875,340	981,642
1918	4,156,981	336,647	3,965,726	359,659	446,827	71,535	875,340	981,642
Totals	\$8,573,882	\$2,142,575	\$15,613,601	\$8,434,824	\$11,217,524	\$1,228,261	\$2,327,508	\$1,840,770
1918	8,800,621	2,228,357	8,169,429	9,063,130	11,091,174	1,809,698	2,931,883	2,208,763

*Includes Assessor's estimates of uncollected net proceeds and personal.

TABLE No. 14
Valuation of All Properties by Classes, 1917-1918

Class	1917		1918	
	Valuation	Per cent	Valuation	Per cent
Land (acreage)	\$38,502,188	18.25	\$37,347,550	18.86
Live stock	20,145,221	10.97	22,016,717	11.12
Railroads	62,046,826	33.80	70,684,849	35.70
Public utilities (other than railroads)	9,585,913	5.22	10,922,091	5.51
Mining property (imp. and pat. claims)	10,508,397	5.72	11,108,978	5.61
Net proceeds of mines (estimated)	15,613,600	8.51	8,159,429	4.12
Town property (real and improvements)	19,247,122	10.48	20,452,355	10.33
Country property (improvements)	2,327,533	1.27	2,654,397	1.34
Personal property	3,070,975	1.67	4,066,261	2.05
Merchandise	2,992,276	1.63	4,702,376	2.38
Banks	2,705,002	1.47	2,990,124	1.51
Motor vehicles	1,532,545	.84	2,540,099	1.28
Water rights and pipe lines	307,595	.17	367,330	.19
Totals	\$183,585,188	100.00	\$198,012,556	100.00

TABLE No. 15

**State Budget of Estimated Receipts and Expenditures for the Tax Levy Years
of December 1, 1917, to November 30, 1918; and December 1, 1918, to
November 30, 1919.**

Estimated disburseable receipts into State Treasury	December 1, 1917, to November 30, 1918	December 1, 1918, to November 30, 1919
MISCELLANEOUS		
Cash, estimated balances in disburseable funds	\$31,000.00	\$25,000.00
Licenses, liquor, dance-halls, etc.	80,000.00	10,148.00
Licenses, fish and game	1,250.00	1,250.00
Licenses, banks	3,500.00	3,750.00
Licenses, attorneys	250.00	850.00
Licenses, automobiles	28,000.00	28,000.00
Licenses and fees, Insurance Commissioner	12,500.00	15,000.00
Fees, Secretary of State	20,000.00	16,000.00
Fees, State Engineer	6,000.00	9,000.00
Fees, State Assayer .....	.....	500.00
Interest from banks	2,500.00	2,500.00
Orphans' Home	5,000.00	5,500.00
Hospital for Mental Diseases	500.00	3,500.00
Inheritance taxes	25,000.00 .....	.....
Total miscellaneous	\$215,500	\$120,998.00
EDUCATIONAL		
Fees, Supreme Court	\$1,000.00	\$2,000.00
Fees, Secretary of State	8,000.00	11,000.00
Fees, Surveyor-General	500.00	500.00
Fines, Justice Courts	5,000.00	7,500.00
Fines, District Courts	1,000.00	1,000.00
Escheated estates	1,000.00	500.00
Sale of Statutes and Reports	2,000.00	1,200.00
Interest on School lands	69,000.00	61,000.00
Income from trust funds:		
Nevada State bonds	34,000.00	32,875.00
University of Nevada bonds .....	.....	4,650.00
Massachusetts State bonds	20,460.00	20,460.00
Idaho State bonds	7,000.00	7,000.00
California State bonds	9,280.00	9,280.00
New Mexico State bonds	6,250.00	6,250.00
Churchill County bonds	275.00	225.00
Nye County bonds	1,140.00 .....	.....
Clark County bonds	4,050.00	3,780.00
Esmeralda County bonds	1,200.00	900.00
White Pine County bonds	1,162.00	1,996.00
Lincoln County bonds	17,120.00	17,120.00
Elko County bonds .....	.....	8,700.00
Humboldt County bonds .....	.....	3,675.00
United States Liberty bonds .....	.....	800.00
Goldfield School District No. 4 bonds .....	.....	1,000.00
Total educational	189,437	193,411.00
From counties for District Judges' salaries and expenses	51,500	51,500.00
Amount required from taxation	1,087,315	1,124,172.76
Grand totals	\$1,543,752	\$1,490,081.76

TABLE No. 15—Continued

Estimated state expenditures	December 1, 1917. to November 30, 1918	December 1, 1918. to November 30, 1919
MISCELLANEOUS		
Governor's Office—		
Salary of Governor.....	\$7,000.00	\$7,000.00
Salary of Secretary.....	2,400.00	2,400.00
Salary of Clerk.....	1,200.00	1,200.00
Salary of extra clerks.....	800.00	800.00
Traveling expenses.....	1,000.00	1,000.00
Annual dues of Governors' Conference.....	150.00	150.00
	\$12,050.00	\$12,050.00
Lieutenant-Governor and Adjutant-General—		
Salary of Lieut.-Governor and Adjutant-General.....	\$3,600.00	\$3,600.00
Expenses.....	500.00	528.11
Care and transportation of military property.....		1,000.00
National military emergency expenses.....		4,000.00
	4,100.00	9,128.11
Secretary of State—		
Salary of Secretary of State.....	\$3,600.00	\$3,600.00
Salary of Deputy.....	2,400.00	2,400.00
Salary of Chief Clerk.....	2,000.00	2,000.00
Salary of Typists.....	2,400.00	2,400.00
	10,400.00	10,400.00
Attorney-General and Land Commissioner—		
Salary of Attorney-General.....	\$3,600.00	\$3,600.00
Salary of Land Commissioner.....	1,400.00	1,400.00
Salary of Deputy Attorney-General.....	2,400.00	2,400.00
Salary of Typist.....	1,200.00	1,228.67
Salary of additional typists.....	450.00	
Contingent expenses.....	1,000.00	711.40
Traveling expenses.....	1,000.00	480.27
	11,050.00	9,738.34
State Controller and Insurance Commissioner—		
Salary of Controller.....	\$3,600.00	\$3,600.00
Salary of Deputy.....	2,400.00	2,400.00
Salary of Typists.....	2,400.00	2,400.00
New records.....	300.00	
Expense collecting State revenue.....	500.00	300.00
	9,200.00	8,700.00
State Treasurer—		
Salary of Treasurer.....	\$3,600.00	\$3,600.00
Salary of Deputy.....	2,400.00	2,400.00
Salary of Typist.....	1,200.00	1,200.00
	7,200.00	7,200.00
State Mine Inspector—		
Salary of Inspector.....	\$3,600.00	\$3,600.00
Salary of Deputies.....	4,300.00	4,300.00
Traveling and Office Expenses.....	4,500.00	4,500.00
Appliances.....	250.00	250.00
	13,150.00	13,150.00
State Printing Office—		
Salary of Superintendent.....	\$3,600.00	\$3,600.00
Salary of bookkeeper.....	1,200.00	1,300.00
Support of office.....	28,000.00	28,000.00
Book binding.....	3,000.00	3,000.00
New material and repairs.....	1,000.00	1,000.00
Heating plant.....	2,000.00	
	\$8,800.00	\$6,800.00
State Engineer—		
Salary of Engineer.....	\$3,600.00	\$3,600.00
Salary of Assistant Engineer.....	2,400.00	2,400.00
Support of.....	12,500.00	10,531.65
	18,500.00	16,531.65
Bank Examiner—		
Salary of Examiner.....	\$4,000.00	\$4,000.00
Salary of clerk.....	1,200.00	1,200.00
Traveling and office expenses.....	1,500.00	2,342.28
	6,700.00	7,542.28
State Auditor—		
Salary of Auditor.....	\$3,000.00	\$3,000.00
Office and traveling expenses.....	2,500.00	2,500.00
	5,500.00	5,500.00
State Assayer—		
Salary of Assayer.....	\$3,000.00	\$3,000.00
Expenses.....	2,000.00	500.00
	5,000.00	3,500.00
Inspector of Apiaries—		
Salary and expenses.....	1,500.00	1,500.00
Fish Commission, support of.....	8,000.00	6,000.00

TABLE No. 15—Continued

Estimated state expenditures	December 1, 1917, to November 30, 1918	December 1, 1918' to November 30, 1919	
Fish and Game Warden—			
Salary of	\$1,800.00	\$1,800.00	
Expenses of	1,200.00	1,200.00	
	3,000.00		3,000.00
State Board of Health—			
Salary of Secretary	\$1,500.00	\$1,500.00	
Expenses	1,750.00	1,750.00	
	3,250.00		3,250.00
Railroad Commission—			
Salaries of Commissioners	\$11,500.00	\$11,500.00	
Salary of Secretary	2,400.00	2,400.00	
Expenses	5,000.00	5,000.00	
Support of National Association	500.00	500.00	
	19,400.00		19,400.00
Public Service Commission—			
Salary of Engineer	\$2,500.00	\$2,500.00	
Salary of Secretary	600.00	600.00	
Expenses	2,250.00	2,250.00	
	5,350.00		5,350.00
Tax Commission—			
Salaries of Commissioners	\$2,184.00	\$3,000.00	
Salary of Secretary	2,184.00	3,000.00	
Salary of Clerk	1,500.00	1,800.00	
Salary of Reporter and Typist	1,500.00	1,800.00	
Expenses	2,682.00	3,400.00	
	10,000.00		13,000.00
Labor Commission—			
Salary of Commissioner	\$1,200.00	\$1,200.00	
Expenses	1,300.00	1,900.00	
	2,500.00		3,100.00
State Police—			
Support of	\$28,400.00	\$28,400.00	
Salary of Superintendent	3,600.00	3,600.00	
	30,000.00		30,000.00
State Prison—			
Support of	\$71,500.00	\$71,500.00	
Payment for convicts' labor	1,000.00	1,000.00	
Improvements and repairs	2,500.00	2,500.00	
Cutting stone for new prison	5,000.00		
	80,000.00		75,000.00
Hospital for Mental Diseases—			
Salary of Superintendent	\$2,400.00	\$2,400.00	
Support of	60,000.00	55,000.00	
Construction and equipment	3,400.00	1,250.00	
Library and amusements	400.00	400.00	
Chaplains	360.00	360.00	
Relief of discharged patients	150.00	150.00	
	66,710.00		59,560.00
Orphans' Home—			
Support of	\$22,500.00	\$21,088.51	
Salary of Superintendent	2,400.00	2,400.00	
Education at Carson schools	1,500.00	1,500.00	
Medical attendance	900.00	900.00	
Library, amusements, etc.	60.00	500.00	
Repairs	1,500.00		
	28,850.00		26,338.51
Supreme Court—			
Salaries of Judges	\$18,000.00	\$18,000.00	
Salary of Clerk	3,000.00	3,000.00	
Salary of Reporter	1,500.00	1,500.00	
Salaries of Stenographers and Clerks	3,720.00	3,720.00	
Salary of Bailiff	150.00	150.00	
Salary of Reporter of Decisions	300.00	300.00	
Publishing decisions and advertising	3,300.00	3,300.00	
Compiling and printing Nevada Reports	3,300.00	5,071.57	
	33,270.00		35,041.57
Legislature			55,000.00
District Judges, salaries and expenses	51,500.00		51,500.00
State Capitol—			
Wages of employees	\$10,280.00	\$10,000.00	
Stationery, fuel and lights	7,500.00	7,500.00	
Current expenses	7,500.00	7,500.00	
Repairs and improvements		3,000.00	
Grounds and water-works		3,000.00	
	25,280.00		31,000.00
State Library—			
Salaries of Librarians	\$3,200.00	\$3,200.00	
Support of Library	15,000.00	5,000.00	
	18,200.00		8,200.00

TABLE No. 15—Continued

Estimated state expenditures	December 1, 1917, to November 30, 1918	December 1, 1918, to November 30, 1919
State Historical Society, support of.....	3,100.00	3,000.00
State elections.....		1,200.00
Refunding taxes twice paid.....	500.00	1,000.00
County officers' salaries, State's proportion.....	40,000.00	23,000.00
State Highway Department.....	201,000.00	167,169.66
Rabies Commission.....		15,000.00
Insurance of state property.....	10,300.00	9,000.00
Insurance of state employees, Industrial Commission.....	1,750.00	2,300.00
Maintenance and repairs of Governor's Mansion.....	1,750.00	1,822.00
Artesian well bounty.....	5,000.00	5,000.00
Prevent pollution of public streams.....	10,000.00	9,480.10
Military emergency demands.....		7,612.00
Rewards offered by the Governor.....	1,000.00	1,750.00
Nevada Rifle Clubs.....	4,000.00	
Motor-vehicle licenses, expense.....	3,000.00	3,148.32
Motor-vehicle licenses, distribution to counties.....	2,000.00	2,000.00
County settlements.....	2,822.00	
State loans, interest and redemption.....	78,000.00	35,000.00
Territorial Interest Fund.....	19,000.00	36,000.00
Support of Florence Crittenton Home.....	2,400.00	2,800.00
Nevada State Agricultural Society.....	8,000.00	8,000.00
Southern Nevada Agricultural Board.....	2,800.00	2,600.00
Northeastern Nevada Agricultural Board.....	3,050.00	3,050.00
Care G. A. R. Cemetery, Carson City.....	150.00	150.00
Allowance Volney B. Cross.....		600.00
Expense State Board of Investments.....	1,250.00	100.00
Support of Commission on Uniform Laws.....	150.00	150.00
Exhibit in Union Pacific Building, Omaha.....	250.00	250.00
Perfecting title to Fish Hatchery.....	100.00	
Printing changes in Revised Laws.....	75.00	
Reimburse the General Fund.....	50,000.00	50,000.00
Total miscellaneous.....	\$986,107.00	\$940,336.66
EDUCATIONAL		
Surveyor-General—		
Salary of Surveyor-General.....	\$3,600.00	\$3,600.00
Salary of Deputy.....	2,400.00	2,400.00
Salary of Draughtsman.....	2,000.00	2,000.00
Salary of Typist and Clerks.....	3,200.00	3,200.00
Township plats.....	100.00	200.00
	\$11,300.00	\$11,400.00
Superintendent of Public Instruction—		
Salary of Superintendent.....	\$3,600.00	\$3,600.00
Salary of Typist.....	1,200.00	1,200.00
Expenses.....	750.00	750.00
Teachers' examinations.....	825.00	825.00
Teachers' Institutes.....	625.00	
Text-Book Commission.....	250.00	
Salaries of Deputies.....	10,000.00	10,000.00
Expenses of Deputies.....	6,500.00	6,554.57
	23,750.00	22,929.57
Support of Public Schools.....	268,720.00	290,000.00
Support and tuition of deaf and blind.....	6,000.00	5,000.00
Emergency school support.....	6,000.00	6,000.00
Physical training.....	8,600.00	
Promotion of vocational training.....	15,000.00	
Establishing evening schools.....	10,000.00	
Teachers' pensions.....	6,000.00	6,000.00
University of Nevada—		
Support of University.....	\$126,000.00	\$130,000.00
Public Service Department.....	23,675.00	34,198.91
Stock farm operation.....	6,500.00	6,500.00
Agricultural Building.....		10,000.00
	156,175.00	180,698.91
Nevada School of Industry.....	28,500.00	19,677.35
Ely School of Mines.....	\$5,625.00	\$4,462.89
Tonopah School of Mines.....	3,750.00	4,704.56
Virginia City School of Mines.....	2,600.00	2,820.53
Goldfield School of Mines.....	5,625.00	5,990.29
	17,600.00	17,978.27
Totals.....	\$557,745.00	\$599,694.10

TABLE No. 15—Continued

Estimated state expenditures	December 1, 1917, to November 30, 1918	December 1, 1918, to November 30, 1919
RECAPITULATION		
Estimated Receipts—		
Miscellaneous	\$215,500.00	\$120,998.00
Educational	189,437.00	193,411.00
District Judges, salaries and expenses, from counties	51,500.00	51,500.00
Taxation	1,087,316.00	1,124,172.76
Totals of estimated receipts	\$1,543,752	\$1,490,081.76
Estimated Expenditures—		
Miscellaneous	\$394,607.00	\$388,897.66
Educational	557,645.00	549,684.10
District Judges, salaries and expenses	51,500.00	51,500.00
Totals of estimated expenditures	\$1,543,752	\$1,490,081.76

TABLE No. 16
Financial Statement of Tax Commission

FOR THE YEAR 1917

Receipts—	
Annual appropriation, special fund	\$7,000.00
Annual appropriation, general fund	6,000.00
Total appropriations	\$13,000.00
Expenditures—	
Bonds for members of Commission	\$125.00
Salaries of members of Commission	2,120.82
Salary of Secretary	2,691.66
Furniture and fixtures	477.58
Office supplies and expenses	456.46
Postage stamps	200.00
Office labor	2,554.13
Traveling expenses	1,230.91
Legal expenses	863.55
Total expenditures	10,720.11
Balance unexpended	\$2,279.89

FOR THE YEAR 1918

Receipts—	
Annual appropriation, special fund	\$7,000.00
Annual appropriation, general fund	6,000.00
Total appropriations	\$13,000.00
Expenditures—	
Bonds for members of Commission	\$125.00
Salaries of members of Commission	2,800.00
Salary of Secretary	3,000.00
Furniture and fixtures	169.00
Office supplies and expenses	382.57
Postage stamps	180.00
Office labor	3,579.30
Traveling expenses	915.06
Legal expenses	1,139.08
Total expenditures	12,290.01
Balance unexpended	\$709.99

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STATE OF NEVADA

BIENNIAL REPORT

OF THE

Nevada Industrial Commission

Reviewing the Administration of the Nevada Industrial Insurance Act
for Period—July 1, 1916, to June 30, 1918



CARSON CITY, NEVADA
STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT
1919



LETTER OF TRANSMITTAL

CARSON CITY, NEVADA, January, 1919.

HON. EMMET D. BOYLE, *Governor of Nevada and Chairman of the Nevada Industrial Commission Board, Carson City, Nevada.*

DEAR SIR: We have the honor to submit herewith for your consideration and for the information of the Nevada Industrial Commission Board, a review of the administration of the Nevada Industrial Insurance Act for the period of the fourth and fifth fiscal years, July 1, 1916, to June 30, 1918, inclusive.

Respectfully,

GEO. D. SMITH, *Chairman,*
H. A. LEMMON, *Commissioner,*
ROBT. F. COLE, *Commissioner,*
Nevada Industrial Commission.

REPORT OF NEVADA INDUSTRIAL COMMISSION

INTRODUCTORY

The period including the fourth and fifth fiscal years of the State Insurance Fund has been marked by a greatly increased volume of business, exceeding in amount that of the first three years' operations under the Nevada Industrial Insurance Act, and reflecting in a large measure, the stimulation of the metal-mining industry in Nevada occasioned by the abnormal prices offered for minerals during the war. The developments of these two years may be briefly indicated by comparison of a few figures from the detailed exhibits of the condition of the fund which appear elsewhere in this report with corresponding facts of prior experience.

Premiums earned from July 1, 1916, to June 30, 1918, amounted to \$864,289.48, a gain of 16 per cent over the premium income of the first three years; audited pay-rolls for the respective periods were \$37,749,246.24 and \$38,567,664.98; 2,592 claims for compensation developed, an increase of 18.5 per cent, involving compensation in the sum of \$629,280.02, as compared with 2,187 compensation claims totaling \$651,150.38 incurred to June 30, 1916; the amount of investments increased from \$109,445 as of June 30, 1916, to \$629,750.12 two years later, yielding in interest \$18,682.84 for the fifth fiscal year, \$7,085.19 during the fourth fiscal year, and \$1,745.42 prior thereto.

The increase in premium income, unaccompanied by a corresponding increase in pay-roll exposure and compensation benefits, resulted from three factors: First, the application of premium rates to the entire pay-roll, effective January 1, 1917, instead of pay-rolls from which wages in excess of \$120 per month had been first deducted, as was permitted at the inception of the fund; second, increased premium rates, effective January 1, 1917, for mining operations of Class 1, and milling operations of Class 2; and, finally, higher wages and the addition of many new contributors, due to the impetus given the metal-mining industry during the war. The significance of any material change in mining and milling rates is immediately apparent when it is noted that Classes 1 and 2 alone contribute two-thirds of the entire income of the fund. The surplus of assets over liabilities has been needlessly strengthened by the increase in contributions. The growth of gross excess of assets over known, developed liabilities, from \$11,398.08 on June 30, 1916, to \$246,613.67, on June 30, 1918, represents the amount collected from contributors in the course of five years business in excess of the cost of furnishing the benefits of the Nevada Industrial Insurance Act—an average excess of 15.37 cents on each dollar collected. Upon referring to the audited statements of the experience of the fund by classes at the close of business June 30, 1916 and 1918, it will be observed that credit for the creation of this increase in surplus within the two-year period is due to Classes 1 and 5, which are shown to have surpluses of \$76,343.86 and \$17,094.09, respectively, in 1918,

as compared with deficits in 1916 of \$41,677.67 and \$527.81, respectively. The condition of the other classes remains practically unchanged in the two statements with the exception of Class 6, in which the earlier surplus of \$15,943.33 decreased to \$6,944.35 as of June 30, 1918.

REVISION OF RATES

When it became apparent in 1917, after an actuarial analysis of the benefits of the amended Nevada Industrial Insurance Act, effective July 1, 1917, and of the four years' experience of the several classifications of the contributors to the fund, that the prevailing rates would continue to provide more income than required even with the increased benefits, the first general revision of the initial rates of the fund was undertaken. To obtain the relative degree of hazard of the occupations grouped in Classes 4, 5, 6, and 7, which could not be accurately determined, from the limited experience in Nevada, reliance was placed in the basic manual of the National Workmen's Compensation Service Bureau, the basic rates of which are computed from extensive national compensation experience. By the application of a multiplier, derived from actuarial consideration of the benefits of the amended Nevada statute, and the compensation experience of the several classes of the fund, to the basic rates, equality and adequacy of rates to meet current compensation cost of Classes 4, 5, 6, and 7 were secured. The new schedule became effective January 1, 1918, and with few exceptions, resulted in a considerable reduction in rates. Effective the same date, an arbitrary reduction in the premium rate for mining operations of Classes 1 and 3, from $3\frac{1}{2}$ to $3\frac{1}{4}$ per cent was announced, followed by further reductions of one-quarter of one per cent on March 1, July 1, and October 1, when the initial mining rate of $2\frac{1}{2}$ per cent, which prevailed during 1913, 1914, and 1915, was reached. The rate of $2\frac{1}{2}$ per cent is believed to represent the actual cost of furnishing the compensation provided in the Act, for mining operations under the present scale of benefits and wage conditions.

CATASTROPHE RESERVE

(Credits to the "catastrophe reserve fund" were discontinued on premium collections subsequent to July 1, 1917, at which time the reserve of \$86,512.95, and earned interest of \$8,816.63, constituted a surplus sufficiently large, in the opinion of the Commission, to guarantee a satisfactory insurance fund from year to year. The cost to the contributor of compensation insurance was thereby reduced, and by the further fact of a reduction in the ratio of administrative expense to premiums earned to 7.83 per cent in the fifth fiscal year, as compared with 9.06 per cent for the fourth, and 12.04 per cent for the first three years' operations.

REFUND OF EXCESS PREMIUMS

The principal consideration in the revision of rates was to equitably distribute current losses among current contributors without reference to the surplus which had developed from prior operations. The suggestion that rates be reduced below current needs until the surplus, over and above a catastrophe reserve of \$100,000, should be used up was considered inequitable and undesirable since it gives later contributors the benefit of a surplus taken from industries of an earlier period in the

form of excessive rates before data for the close calculation of rates was available. The proper and just way to take care of this surplus, and whatever surplus accumulates from time to time, is to refund it, in the opinion of the Commission, pro rata by classes to those who contribute it. It is respectfully recommended that legislation be enacted definitely authorizing the disbursement in this manner of whatever excess above a sufficient sum for a catastrophe reserve exists at the close of each year's business. The Commission is moved to offer this suggestion in the belief that the object of the Legislature in creating a state fund, among other considerations, was to permit employers to obtain insurance at no more nor less than cost. In the statute of every State, with the exception of Nevada, in which a state fund has been created to insure liability for workmen's compensation, provision is made for the return to the contributor in the form either of a credit or cash dividend of whatever surplus results from the insurance feature of the Act. Premium rates must necessarily be announced in advance of operations. It is impossible to foretell with absolute accuracy the exact losses which will be experienced, for compensation losses are subject to considerable variation. Where authority exists for the refund of excess premium collections, rates may be made somewhat above the exact indicated cost, thereby providing a margin of safety against unforeseen and unfavorable experience. Favorable consideration of this recommendation will remove an administrative problem of considerable concern.

COMPENSATION

A marked increase in the frequency of accidents characterized the increased industrial activity of the period covered by this report. The average accident rate per 1,000 full-time workers (360-day basis of 8 hours each) for all industries was 148 and 152 for the fourth and fifth fiscal years, respectively, as compared with 122 for the first three years. Much of this increase is more apparent than real, resulting from the recent requirement that all accidents be reported to the Commission, whether followed by time loss or not. Although only those meeting the definition of a "tabulatable accident"—one causing a loss of time other than the remainder of the day on which the accident occurred—are tabulated in this report, the present practice gives the Commission knowledge of a great number of minor injuries which were formerly not reported. The fatality rate showed an unusual increase in 1917, 52 deaths being reported for the fourth fiscal year, greatly exceeding the previous three-year average of 36, and a total of 39 in the fifth fiscal year.

Increased familiarity with benefits of the Act, and a close follow-up of reports of injuries by the Claim Department are responsible for a greater number of claims being filed for minor injuries, with a consequent decrease in the average compensation incurred per case, from \$297.74 prior to June 30, 1916, to \$279.40 and \$252.41, respectively, for the fourth and fifth fiscal years. A considerable reduction in the average number of days lost per accident shown in the table of severity of accidents in the fifth fiscal year, as compared with the year prior, suggests another factor having a bearing on the decrease in average compensation costs, namely the desire of the men to return to work as soon as possible because of the prevailing high wages at this time.

The compensatory injuries sustained during the period covered by this report were divided as follows:

Nature of injury	Fourth fiscal year July 1, 1916-June 30, 1917		Fifth fiscal year July 1, 1917-June 30, 1918	
	No cases	Compensation	No cases	Compensation
Temporary injuries	1,041	\$66,827.16	940	\$54,075.94
Permanent injuries	159	155,892.81	157	135,223.67
Fatalities	43	85,098.99	38	122,086.25
Funeral benefits		5,184.07		4,951.60
Total	1,243	\$313,002.53	1,135	\$316,277.49

The effect of the increased benefits for temporary total disability and fatal cases contained in the amendments to the Act which became effective July 1, 1917, is shown in the increase in the average compensation paid per day for temporary total disability from \$1.71 in the fourth to \$1.90 in the fifth fiscal year, an increase of 11.1 per cent; and the increase from \$2,026.17 to \$3,211.23—a 58 per cent gain—in the average benefit incurred in fatal cases in these respective years. The percentage increase actually experienced compares very closely with the respective calculated values of 11.6 per cent and 52.0 per cent worked out prior to the operation of these amendments on the basis of the first three years experience.

MERIT RATING

Consideration of the compensation of injuries is not complete without reference to the vastly more important matter of accident prevention. Students of the subject say that one-half of all industrial accidents can be avoided; that accident prevention is partly mechanical—in the way of proper safeguards, and, of equal importance, morale, the development of a spirit of "safety first" in the minds of the workers. Employers generally are more apt to be influenced to use every effort for the elimination of accidents by monetary considerations than by an appeal to a sense of duty to humanity. For this reason, systems of merit rating have been adopted in several of the States, so that the careful employer may be rewarded, and encouraged to continue his efforts.

From the standpoint of equitable distribution of loss, it is necessary to go further than the division of contributors into classifications by industry for the purpose of assessing each member thereof with the average compensation cost of the group, for all risks within a given industry are not of the same degree of hazard, and therefore should not share the average rate of the classification. However, the relative responsibility of each contributor cannot be determined exactly, especially in Nevada where mining predominates, but an approximation can be arrived at from the past experience of each contributor in relation to the average experience of the class, to serve as the basis for a modification of the average rate, thus serving the double purpose of equitable distribution of loss and merit rating for the encouragement of accident prevention.

After considerable study of the question with relation to the industries of this State, where a compromise is often necessary between proper equipment and ideal working conditions, and what can be secured with available resources, the Commission is of the opinion that a great improvement in accident frequency would result from a moder-

ate measure for the merit rating of contributors by experience. Believing that the majority of employers and interested employees would endorse such a plan if submitted to them for ratification, it is respectfully recommended that the Act be amended to authorize the Commission in its discretion to adopt rules and regulations providing for the merit rating of all contributors to the State Insurance Fund, and the reduction of the premium rate of employers whose accident experience is decidedly more favorable than the average of their classification.

"ACCIDENT BENEFITS"

It became the duty of the Commission on July 1, 1917, to collect "Accident Benefit" premiums from, and to furnish medical and hospital treatment to the injured employees of, every contributor who did not file written notice of the consummation of other arrangements for furnishing the medical benefits conferred in section 23 of the Act. Two problems confronted the Commission upon the passage of this amendment in 1917—first, the determination of premium rates for this service, and, second, the designation of physicians for the care of accident benefit fund cases.

In the solution of the first problem questionnaires were sent to every contributor to the State Insurance Fund, asking confidential information relative to the cost of medical and hospital treatment. It was believed that a definite ratio existed between the cost of compensation and medical benefits, which could be determined from the experience of employers generally throughout the State. Based upon the information obtained from the questionnaires returned, and a study of available data on the subject, with reference to local conditions of somewhat higher medical fees and the great distances which physicians are obliged to cover in many cases to reach injured men, particularly with the smaller mines, initial premium rates for "Accident Benefits" were set at seventy-five per cent of the compensation rate for each class, with the exception of Class 6. "Accident Benefits" were extended to the employees of Class 6, Municipal, without additional premium for this service, and a certain percentage of the premiums computed at the existing rates for compensation was credited to the Accident Benefit Fund in lieu of a reduction in the compensation rate. The injured employees of municipalities were thus assured of proper treatment without cost to themselves, in accordance with the spirit and letter of the law. Prior to July 1, 1917, these claimants were frequently obliged to furnish their own treatment.

It was also decided to leave the selection of physicians to the injured men, the Commission reserving the right to order a change in treatment whenever it should be deemed necessary to promote and insure recovery. A schedule of fees for medical service, drawn up with the approval of the State Medical Society, seems to have met with the approval of physicians generally. Not only in this particular, but in all matters pertaining to the act, the Commission has enjoyed the fullest cooperation and most cordial relations with the medical profession in Nevada without exception. This report would be incomplete without due recognition of this invaluable aid in accomplishing the purposes of the statute, and of the commendable spirit shown by the doctors of some of the larger companies in voluntarily sending out the more serious cases and those requiring a specialist's attention.

A total of 325 contributors, employing 2,560 full-time workers, with an annual pay-roll of \$3,298,232.57 contributed earned premiums of \$29,095.01 to the Accident Benefit Fund for the period July 1, 1917, to June 30, 1918. All other contributors filed notice that other arrangements for caring for their injured employees had been made. The Commission has no jurisdiction over these arrangements and is not empowered to inquire into them unless it is shown in any case that the medical and hospital treatment furnished is endangering the health, life, or recovery of an injured employee, when a change of physicians or treatment may be ordered. In the few cases of this character, which came to the attention of the Commission, employers promptly changed physicians without the necessity of a formal order when the suggestion was made. The cost of medical treatment incurred in the 200 Accident Benefit cases of the year ending June 30, 1918, amounted to \$9,778.56, leaving a surplus of \$16,245.52, which will be returned pro rata to the contributors to the Accident Benefit Fund, in the event of favorable consideration by the Legislature of the recommendation for the return of excess premium collections. With the developed experience of the year as a basis, the following revision of accident benefit rates was adopted to take effect January 1, 1919:

For mining and packing houses	75% of the compensation premium rate
For all other hazardous occupations	50% of the compensation premium rate
For the less hazardous so-called preferred risks	25% of the compensation premium rate

Two very serious accidents, both involving the spine, are included in the experience of the Accident Benefit Fund to the date of this report. Notice of the first case, where a miner fell 70 feet down a shaft, fracturing the lumbar vertebrae was not received until three days had elapsed after the accident, when his condition was too serious to permit removal to an orthopedic specialist. The patient was given every attention by a local physician, and at the end of one year was discharged from treatment with a 55 per cent permanent partial disability. On this case \$1,734.60 was expended for accident benefits. In the second case, the injured man was buried in a run of rock resulting in complete paralysis below the waist, which is slowly clearing up. The patient was removed to San Francisco immediately, and after a complete examination by specialists an operation was performed on fractured vertebrae of the dorsal region, which disclosed a laceration of the spinal cord. Two weeks later the patient was returned to Reno, where he is now being cared for. Treatment in this case cost the Accident Benefit Fund \$2,057.29 to January 1, 1919.

INVESTMENTS

Approved securities have been secured from time to time, as moneys were available in the State Insurance Fund for investment. The character of bonds held by the State Treasurer for the State Insurance Fund on June 30, 1918, were as follows:

	<i>Book value</i>	<i>Par value</i>
Liberty Bonds	\$108,250.00	\$108,250.00
Treasury certificates of indebtedness	125,000.00	125,000.00
Bonds of other States	149,119.80	150,000.00
County bonds of Nevada	119,100.00	119,100.00
County bonds of other States	25,810.32	25,000.00
Total	\$522,280.12	\$522,350.00

In addition, the sum of \$107,500 was on deposit June 30, 1918, in

banks within the State of Nevada as interest-bearing deposits, secured by municipal bonds of equal value.

The investments of the fund are largely in liquid securities, a considerable sacrifice of interest rate being accepted to secure a high degree of marketability. With the present preponderance of highly liquid securities, it is now desirable to turn to some of the more attractive bonds offered by the political subdivisions of the State. The continuance of the fund seems now assured, and as its safety would in no wise be imperiled by investment in bonds of incorporated cities and school districts in Nevada, it is respectfully suggested that the provisions of section 40 of the Act be amended to permit investment in this class of securities, and also in the bonds of Federal Farm Loan Banks, as recommended by Hon. Wm. G. McAdoo, former United States Treasurer, to the State Board of Investment.

It is worthy of note that interest income promises to soon surpass in amount the administrative expense of the Commission. Interest earnings during the month of December, 1918, amounted to \$2,400, as compared with estimated monthly expenses of \$2,750 for the year 1919.

LITIGATION

But two appeals from the findings of the Commission in the settlement of over 4,700 cases involving approximately \$1,280,000 in compensation have been prosecuted in the courts, in the course of five years operations.

Brown v. Nevada Industrial Commission

E. E. Brown filed a claim for compensation for the loss of the first, second, and third fingers of his right hand, as the result of injuries sustained on September 24, 1915, while in the course of employment by M. E. McGhan, his father-in-law, who had neither rejected the provisions of the Nevada Industrial Insurance Act, nor offered to pay premiums to the State Insurance Fund, until after the happening of the accident. The provisions of the 1913-1915 statute relative to the status of an employee injured under this state of facts are indefinite, and to obtain a judicial interpretation of the issue, which involved twelve other cases, the claim was rejected and every aid extended to claimant in having the case passed upon by the Court. The original action, an application for a writ of *certiorari*, was dismissed by the Supreme Court of Nevada, December 15, 1916, in an opinion stating that *certiorari* was not the proper remedy for claimant, whereupon Brown brought suit against the Nevada Industrial Commission for the amount of compensation claimed, in the District Court of Nye County, and was awarded a judgment on November 21, 1917, the District Judge holding that, where there was a conclusive presumption of the acceptance of the provisions of the Act by an employer who had not filed a written rejection of the terms thereof, his employees were entitled to compensation. The July 1, 1917, amendments to the Act, which had meanwhile become effective, removed the possibility of a recurrence of the issue. Accordingly, the Brown Case and the other cases involving the same issue were settled without appeal to the Supreme Court for a review of the decision.

Eckley v. Nevada Industrial Commission

The issue in this case was whether a widow was entitled to compensa-

tion for the death of her husband, when the injuries which caused his death were sustained on a public highway while on his way from work.

J. W. Eckley, aged 74, employed as watchman on the 3-o'clock shift by the Union Shaft Companies, was found unconscious about 11 p. m., with severe lacerations of the head and face, by the departing shift, on a public highway within the town limits of Virginia City, and within the side-lines of the company's mining claims, at a point 2,500 feet from the mine buildings, on ground to which the companies claimed mineral rights, but not the surface rights. The mineral rights underlying the entire town are claimed by one or another of the Comstock mining companies. It was not shown whether the injuries to the head, which resulted fatally, were caused by falling on the ice or by being run down by one of the oncoming shift. The widow's claim for compensation was rejected by the Commission on the ground that the injury was not sustained in the course of employment. The case was tried before a jury in Virginia City, resulting in a decision for the Commission.

Actions against the Commission were filed in two other cases; one involving the rights of an alleged common-law wife to compensation, and the other, where a workman lost the function of his arm by the spread of ankylosis, following his refusal to have two ankylosed fingers of his right hand amputated, although the probable consequences of his obstinancy were fully explained when final settlement was made and a release taken. Neither case has been prosecuted.

A decision was rendered by the Supreme Court of Nevada on March 15, 1918, in the case of

Washoe County v. Nevada Industrial Commission

Three counties in Nevada, including Washoe, declined in 1913 to pay premiums to the Nevada Industrial Commission, alleging that the compulsory application of the provisions of the Act to municipalities was unconstitutional. Suit brought in the Second Judicial District against Washoe County as a test case was decided in favor of the Commission and on appeal the decision of the lower court was affirmed by the Supreme Court, March 15, 1918. Every county now contributes to the State Insurance Fund.

EXCLUSION OF FARM LABOR AND DOMESTICS

That farmers are not unanimous in desiring exclusion from the benefits of the Nevada Industrial Insurance Act, as provided in section 43, is shown by the number of requests received from progressive, substantial farmers, asking how they might secure workmen's compensation insurance for their employees. They are not only absolutely excluded from the benefits of the Act, but are unable to secure insurance from the employers' liability insurance companies who do not care to accept only this business in Nevada.

The extent of the desire on the part of the farmers for this coverage was indicated by the fact that 55 per cent of the farmers, who answered questions sent out by the Labor Commissioner on the subject, were in favor of being permitted to insure, and 42 per cent in favor of a compulsory Act.

The Commission therefore respectfully urges legislation which will at least permit farmers at their option to avail themselves of the

benefits of the Act, and to leave their status unchanged if they do not so elect. It is reported that a provision of this character in the California Workmen's Compensation Act has met with considerable favor among the farmers of that State and their employees.

TABLES

The subjoined tables present a comparative statement of facts relative to the State Insurance Fund at the close of business, June 30, 1916, 1917, 1918, and a separate résumé for the fourth and fifth fiscal years of the disposition of claims, the compensation cost of accidents by industries, the compensation cost of accidents by nature and location of injury, the frequency of accidents, and the severity of accidents by days lost, in important classifications, the medical cost by classifications of Accident Benefit Fund cases, and a statement showing the cumulative experience of the State Insurance Fund by classes at the close of business December 31, 1918, to supplement a similar statement in the audit of Mr. George K. Edler, C.P.A., whose report to the Nevada Industrial Commission Board on the condition of the State Insurance Fund and Accident Benefit Fund, as of June 30, 1918, appears in its entirety.

COMPARATIVE STATEMENT OF CONDITION OF STATE INSURANCE FUND

	<i>36 months ending 1916</i>	<i>12 months ending 1917</i>	<i>12 months ending 1918</i>
Total number of contributors for period	1,565	1,087	967
Average number of employees	11,306	13,410	12,981
Pay-roll exposure	\$38,567,664.98*	\$17,704,724.99*	\$20,044,521.25
Earned premiums	\$743,230.17	\$406,856.15	\$455,433.33
Compensation paid, award, or estimated due for accidents of period	\$651,150.38	\$313,002.53	\$316,277.49
Number claims filed during period	2,069	1,333	1,300
Administrative expense	\$89,474.45	\$37,049.84	\$35,424.17
Ratio administrative expense to premium income ..	12.04%	9.06%	7.83%
Total surplus, including catastrophe reserve, end of period	\$11,398.06	\$138,662.67	\$246,613.77
Amount of investments at end of period	\$109,445.00	\$278,433.23	\$629,750.12
Interest	\$1,746.42	\$7,085.19	\$18,682.84
Average rate of interest earned	3.645%	3.705%	3.955%

*Pay-roll in excess of \$120 per month not included prior to January 1, 1917.

**STATEMENT OF ACCIDENTS REPORTED AND CLAIMS FILED DURING
FOURTH AND FIFTH FISCAL YEARS, JULY 1, 1916 TO JUNE 30,
1918.**

	<i>Year ending June 30, 1917</i>	<i>Year ending June 30, 1918</i>
Accidents reported during period	2,010	1,999
Duration disability less than one week	605	761
Duration disability over one week	1,405	1,238
	<u>2,010</u>	<u>1,999</u>
Number fatalities reported for period	52	39
Number of claims filed during period	1,333	1,800
Claims pending at end of previous period	169	187
	<u>1,502</u>	<u>1,487</u>
Disposition of claims:		
Awarded final settlement: Disabilities	1,163	1,190
Fatal cases	29	19
Claims suspended and rejected: Disabilities	83	117
Fatal cases	40	16
Claims in process of adjustment:		
Monthly payments during disability	55	39
Proof incomplete, nonfatal cases	95	79
Proof incomplete, fatal cases	37	27
Cases pending at end of period	187	145

CAUSES OF SUSPENSION AND REJECTION OF CLAIMS

Cause	Number cases fourth fiscal year				Number cases fifth fiscal year			
	Total No.	Extent of disability			Total No.	Extent of disability		
		Tem- porary total	Perma- nent partial	Death		Tem- porary total	Perma- nent total	Death
Disability less than seven days	24	24			75	75		
Employer not a contributor, or in default ..	8	6	2		18	17	1	
Injured not in employ of a contributor, as alleged	1	1			1	1		
Proof of injury incomplete	29	28	1		16	14	2	
Disease, not injury	10	7		3	5	5		
Claim not filed within one year	2	1	1					
Not by accident in course of employment ..	8	4	1	3	5	5		
Going to or from work	6	4		2	3	1	1	1
Intoxication				1	1	1		
No known dependents	1			1				
Duplicate claim under assumed name; partner; not injured in Nevada; per- sonal quarrel	2	2			1	1		
Total cases suspended or rejected	91	77	5	9	125	120	4	1

TABULAR STATEMENTS
FOR FOURTH AND FIFTH FISCAL YEARS

TABLE

Compensation Cost of Accidents of Fourth Fiscal Year

Industry	Number of contributors	No. full time workers	Pay-roll exposure †
<i>Classes 1 and 2—Mining and Ore Reduction—</i>			
Copper mining	84	629	\$966,775.90
Gold and silver mining	341	3,404	5,245,281.16
Miscellaneous metal mining	88	577	824,538.51
Mining, nonmetals	13	72	87,042.19
Total mining	521	4,082	\$7,123,617.75
Ore milling, moist way	85	836	\$1,266,900.57
Plaster mills	3	45	57,336.00
Smelting	7	108	153,414.83
Total ore reduction	95	984	\$1,477,711.40
Construction, mine and mill buildings		152	\$242,979.30
Clerical, office employees		171	246,330.00
Commissary employees		80	79,237.68
Total Classes 1 and 2	616	6,069	\$9,169,876.13
<i>Class 3—Nevada Consolidated Copper Company—</i>			
Underground (Cav. Sys. Cop.)	1	382	\$605,982.36
Open pit, steam shovel		214	324,633.14
Smelting	1	912	1,265,069.27
Crushing and concentration		878	1,176,267.80
Mine-surface employees		593	768,885.79
Clerical		87	124,377.27
Total Class 3	2	3,066	\$4,265,165.53
<i>Class 4—Railroads—Total Class 4</i>	11	418	\$431,054.51
<i>Class 5—Public Utilities—</i>			
Electric light and power	15	203	\$220,598.29
Telephone and telegraph	6	162	111,059.53
Water-works	7	90	95,625.85
Gas-works	3	23	20,062.42
Total Class 5	31	478	\$447,366.09
<i>Class 6—Municipal—</i>			
Clerical, including schools and University	52	960	\$935,613.42
Prison, Asylum, School of Industry	3	59	76,121.56
Peace officers and paid firemen		141	169,599.00
Road construction		217	193,133.80
All other	1	163	110,226.47
Total Class 6	56	1,540	\$1,484,694.14
<i>Class 7—Miscellaneous—</i>			
Auto dealers, garages, stages	24	72	\$91,096.74
Brewing, bottling, ice manufacturing	8	42	54,404.00
Coal, wood, fuel dealers	9	35	40,615.64
Construction, building	25	55	73,818.06
Creameries and dairies	6	21	24,784.25
Flour milling	2	31	31,457.72
Foundries, machine shops	10	35	51,410.32
Hotels, saloons, restaurants	44	294	254,649.39
Laundries	7	106	80,549.23
Logging and lumbering	6	297	250,511.33
Logging railroad	1	16	12,562.06
Lumber-yard employees, no machinery	7	24	26,943.45
Packing-houses	2	137	137,397.70
Printing	10	67	82,989.73
Stores, mercantile	87	394	447,226.15
Sugar refining	1	4	5,068.57
Teaming and transfer	37	73	87,786.42
Warehouse employees	6	55	70,984.83
All other	29	71	82,321.75
Total Class 7	321	1,829	\$1,906,568.55
Total all classes	1,037	13,400	\$17,704,724.99

*360 days of eight hours each.

†Pay-roll in excess of \$120 per month not included prior to January 1, 1917.

No. 1

July 1, 1916, to June 30, 1917, by Industries

Premium	Compensation					Total number compensatory accidents	Rates compensation cost	
	All cases	Deaths	Permanent Partial Temporary total with	Permanent Partial	Temporary disability only		Average per case	Av. per \$100 pay-roll
\$32,380.26	\$28,660.18	\$18,963.81	\$2,188.27	\$4,776.69	\$2,731.41	63	\$454.92	\$2.965
171,320.95	119,879.27	27,813.72	16,359.26	44,586.37	31,107.92	572	209.57	2.285
26,617.70	21,695.17	10,904.60	968.93	4,501.78	5,334.86	52	417.21	2.691
2,876.31	627.59		58.50	51.19	417.90	8	58.62	.544
\$233,195.22	\$170,762.21	\$57,682.13	\$19,559.96	\$53,928.03	\$39,592.09	696	\$255.34	\$2.397
\$22,229.13	\$9,503.81		\$2,444.97	\$3,736.82	\$3,322.02	69	\$137.72	\$0.750
860.94								
2,301.22	4,741.37	625.00	642.50	3,142.99	330.88	10	474.14	3.091
\$25,391.29	\$14,245.18	\$625.00	\$3,087.47	\$6,879.81	\$3,652.90	79	\$180.32	\$0.964
\$8,504.27	\$483.50				\$483.50	7	\$69.07	\$0.199
1,231.65								
594.28								
\$268,916.71	\$185,490.89	\$58,307.13	\$22,647.43	\$60,807.84	\$43,728.49	782	\$237.20	\$2.023
\$15,149.58	\$53,280.86	\$15,957.91	\$6,647.23	\$21,519.60	\$9,136.12	193	\$275.96	\$8.789
19,222.41	13,394.72	2,820.22	1,018.96	6,144.65	3,410.89	43	311.43	4.125
25,303.37	6,824.41	3,593.53	421.90	1,211.73	1,597.25	39	174.98	.539
14,702.61	8,933.25	5,452.80	459.81	2,285.00	735.64	20	446.66	.760
6,492.60	10,237.06	3,748.16	1,524.96	3,199.32	1,764.62	42	243.73	1.331
626.37								
\$31,496.94	\$92,650.30	\$31,572.62	\$10,072.86	\$34,360.30	\$16,644.62	337	\$274.91	\$2.172
\$8,237.68	\$10,288.62	\$5,068.16	\$1,227.00	\$3,055.32	\$938.14	19	\$541.50	\$2.389
\$4,663.64	\$150.80				\$150.80	3	\$50.26	\$0.068
1,249.76	109.00				109.00	2	54.50	.098
1,735.67	764.99		\$87.50	\$458.48	219.01	5	153.00	.800
614.65								
\$8,263.72	\$1,024.79		\$87.50	\$458.48	\$478.81	10	\$102.48	\$0.229
\$4,965.19								
1,131.81								
2,543.99								
3,948.61	\$63.89				\$63.89	1	\$63.89	\$0.033
1,752.07	465.74		\$68.75	\$32.50	344.49	7	66.55	.423
\$14,341.67	\$529.63		\$68.75	\$52.50	\$408.38	8	\$68.20	\$0.036
\$1,478.59	\$525.33				\$525.33	5	\$105.06	\$0.577
836.54	104.09				104.09	4	26.02	.191
571.38	278.83		\$77.28	\$175.00	26.55	3	92.94	.687
1,839.36	2,177.72		385.85	1,414.87	377.00	4	544.43	2.950
319.20	6,104.36	74,748.60	180.00	1,150.76	25.00	3	2,034.79	24.630
383.44	188.14				188.14	2	94.07	.698
948.63	67.65				67.65	2	33.82	.132
2,118.23								
1,438.72								
7,341.20	3,993.27		548.75	2,652.06	792.46	16	248.52	1.594
941.40								
386.20	1,008.09		125.00	125.00	758.09	11	91.65	3.741
1,731.11	2,530.98		406.73	1,976.93	147.32	7	361.71	1.842
423.78								
3,314.92	825.07		112.67	182.00	530.40	7	103.58	.184
68.42								
1,242.77	804.52		40.61	140.62	623.29	9	89.39	.916
887.26	57.50				57.50	3	19.17	.081
1,330.43	4,352.75		2,063.87	1,882.88	406.00	9	483.95	5.300
\$27,599.43	\$23,018.30	\$4,748.60	\$3,940.76	\$9,700.12	\$4,628.82	85	\$270.92	\$1.208
\$408,856.15	\$313,002.53	\$99,696.51	\$38,044.30	\$108,434.56	\$66,827.16	1,241	\$252.21	\$1.768

1One case permanent total disability included.

TABLE
Compensation Cost of Accidents of Fifth Fiscal Year

Industry	Number of contributors	No. full-time workers	Pay-roll exposure
<i>Classes 1 and 2—Mining and Ore Reduction—</i>			
Copper mining	62	1,161	\$1,964,413.14
Gold and silver mining	280	2,806	4,880,368.44
Miscellaneous metal mining	62	426	700,907.63
Mining, nonmetals	10	88	122,147.14
Total mining	414	4,481	\$7,767,836.35
Ore milling, moist way	91	782	\$1,283,873.16
Plaster mills	3	49	70,841.34
Smelting	8	137	312,341.83
Total ore reduction	102	968	\$1,677,056.33
Construction, mine and mill buildings		201	\$363,949.07
Clerical, office employees		167	270,268.00
Commissary employees		106	107,991.97
Assaying		21	34,844.94
Total Classes 1 and 2	516	5,943	\$10,221,946.06
<i>Class 3—Nevada Consolidated Copper Company—</i>			
Underground mining operations	1	394	\$741,210.31
Open pit, steam shovel		638	971,143.79
Smelting	1	1,024	1,682,799.42
Crushing and concentration		783	1,255,555.38
Mine-surface employees		48	93,662.40
Clerical		114	202,856.66
Total Class 3	2	3,001	\$4,947,227.02
<i>Class 4—Railroads—Total</i>			
	11	364	\$484,976.64
<i>Class 5 Public Utilities—</i>			
Electric light and power	15	227	\$235,319.13
Telephone and telegraph	6	167	136,069.16
Water-works	7	71	79,366.57
Gas-works	3	19	22,364.66
Total Class 5	31	484	\$473,119.32
<i>Class 6—Municipal—</i>			
Clerical, including schools and University	52	818	\$991,550.57
Prison, Asylum, School of Industry	3	46	68,197.50
Peace officers and paid firemen		137	188,391.00
Road construction		210	230,770.06
All other	1	253	295,896.49
Total Class 6	56	1,464	\$1,774,804.92
<i>Class 7—Miscellaneous—</i>			
Auto dealers, garages, stages	22	67	\$100,896.65
Brewing, bottling, ice manufacturing	6	29	40,407.15
Butcher shops	2	17	25,702.96
Coal, wood, fuel dealers	6	17	17,858.10
Construction, building	33	82	119,619.61
Construction, steam railroad	4	139	176,801.66
Creameries and dairies	5	18	23,337.55
Flour-milling	3	24	32,550.26
Foundries, machine shops	7	25	47,780.02
Hotels, saloons, restaurants	22	169	158,067.32
Laundries	5	94	83,872.48
Logging, lumbering, planing mills	6	207	272,673.08
Logging, railroad	1	19	25,837.50
Lumber-yard employees, no machinery	6	28	38,416.37
Packing-houses	2	172	200,636.08
Printing	7	60	83,521.10
Stores	78	321	406,594.68
Sugar refining	1	35	41,502.30
Teaming and transfer	15	34	53,637.13
Warehouse employees	6	70	97,015.43
All other	14	87	95,809.57
Total Class 7	251	1,714	\$2,142,447.26
Total all classes	867	12,970	\$20,044,521.25

* Per 360 days of eight hours each.

No. 2

July 1, 1917, to June 30, 1918, by Industries

Premium	Compensation					Total number compensatory accidents	Rates compensation cost	
	All cases	Deaths	Temporary total with	Permanent Partial	Temporary disability only		Average per case	Av. per \$100 pay-roll
\$64,647.11	\$31,176.99	\$1,250.00	\$5,294.44	\$16,851.54	\$7,781.01	147	\$212.06	\$1.595
165,663.24	115,160.84	49,787.03	10,597.80	33,685.34	21,190.57	448	257.05	2.308
23,047.86	9,013.01	1,207.60	1,722.00	3,789.00	2,254.41	43	209.60	1.286
4,027.32	2,530.99		654.87	1,596.72	579.80	14	202.21	2.318
\$257,385.03	\$158,181.83	\$52,244.63	\$18,269.31	\$55,822.60	\$31,845.29	652	\$242.60	\$2.086
\$25,877.46	\$39,810.23	\$15,831.97	\$5,251.09	\$14,753.03	\$3,974.14	73	\$545.34	\$3.077
1,082.62	25.05				25.05	2	12.02	.085
5,602.41	2,428.91		388.44	920.00	1,120.47	22	110.31	.777
\$32,542.49	\$42,264.19	\$15,831.97	\$5,639.53	\$15,673.03	\$5,119.66	97	\$435.71	\$2.520
\$12,443.91	\$1,334.44		\$110.12	\$357.00	\$967.32	15	\$88.96	\$0.367
1,028.75								
630.56	2,275.59		461.50	1,701.59	112.50	2	1,137.79	2.107
622.67								
\$304,553.41	\$204,056.05	\$68,076.60	\$24,480.46	\$73,554.22	\$7,944.77	766	\$266.59	\$1.996
\$24,325.46	\$17,986.43	\$5,250.00	\$2,485.59	\$5,371.81	\$4,879.03	97	\$185.43	\$2.427
24,278.58	2,827.38		465.60	1,708.03	653.75	22	128.52	.291
25,231.99	14,249.73	3,125.00	1,624.88	6,969.29	2,530.56	53	268.85	.966
9,416.66	16,799.14	9,246.10	944.29	5,524.27	1,064.48	29	579.28	1.338
2,341.56	3,178.97		181.30	2,242.47	755.20	27	117.74	3.395
725.43								
\$86,319.67	\$55,041.65	\$17,621.10	\$5,701.66	\$21,815.87	\$9,903.02	228	\$241.42	\$1.113
\$8,771.64	\$1,253.23				\$1,253.23	16	\$78.33	\$0.258
\$5,013.93	\$210.83		\$7.33	\$137.50	\$66.00	4	\$52.71	\$0.090
1,609.59	9.48				9.48	1	9.48	.001
1,425.46	120.29				120.29	3	40.08	.152
331.41	56.15				56.15	2	28.07	.251
\$3,380.39	\$396.75		\$7.33	\$137.50	\$251.92	10	\$39.68	\$0.084
\$2,486.52	\$5,211.44	\$5,104.43			\$107.01	3	\$1,737.15	\$0.526
584.56								
1,614.78	9,226.00	9,000.00			226.00	3	3,075.33	4.897
3,219.69	12,263.80	11,228.60	\$159.33	\$598.12	277.75	6	2,043.97	5.314
1,906.04	383.28				383.28	6	63.68	.130
\$9,810.59	\$27,084.52	\$25,333.03	\$159.33	\$598.12	\$994.04	18	\$1,504.69	\$1.526
\$1,723.31	\$565.76				\$565.76	7	\$80.82	\$0.560
598.06	90.83				90.83	2	45.42	.224
227.18	121.15				121.15	2	60.57	.471
243.33								
3,166.14	1,553.58		\$216.98	\$873.78	462.82	11	141.23	1.298
6,077.40	803.90		175.56	441.00	187.34	6	133.98	.455
\$27.43								
341.45	78.10				78.10	2	39.05	.240
818.81	105.00				105.00	1	105.00	.220
1,062.10								
1,096.84								
8,251.59	2,118.95		310.61	1,151.77	656.57	13	163.00	.777
2,254.86	2,407.64		702.72	1,617.84	87.08	6	401.27	9.318
796.12	219.52				219.52	8	27.44	.571
2,652.67	10,338.57	\$7,980.49	308.96	1,562.36	486.76	20	516.93	5.153
408.94								
2,685.66	90.67			90.00	.67	2	45.33	.022
612.17	8,361.46	7,966.66	84.00	210.00	100.80	4	2,180.73	20.147
748.20	385.66				385.66	6	64.28	.720
1,245.49								
1,980.88	1,204.50		361.66	661.94	180.80	7	172.07	1.257
\$37,597.63	\$28,445.29	\$15,947.15	\$2,160.49	\$6,608.69	\$3,728.96	97	\$293.26	\$1.328
\$455,433.33	\$316,277.49	\$126,977.83	\$32,509.27	\$102,714.40	\$54,075.94	1,135	\$278.65	\$1.578

TABLE No. 3
Severity of Accidents by Location of Injury, Duration and Extent of Disability and Compensation Cost
Temporary Total Disability Only

Location of injury	Year ending June 30, 1917					Year ending June 30, 1918				
	No. cases	Days lost	Av. days per case	Total comp. temp. total disability	Av. comp. per case	No. cases	Days lost	Av. days per case	Total comp. temp. total disability	Av. comp. per case
<i>Head—</i>										
Eye	30	772	26	\$1,280.70	\$42.02	23	687	23	\$986.22	\$34.22
Internal ear	2	34	77	40.00	20.00	2	40	20	58.12	29.06
Skull	6	1,246	208	1,697.68	286.27	1	19	19	26.68	26.68
Scalp	13	244	19	349.76	26.90	10	126	13	139.29	13.93
Head (n.o.c.)	6	102	17	144.20	24.03	6	141	23	231.19	38.53
<i>Face and Neck—</i>										
Forehead	4	78	19	109.62	27.45	6	65	13	53.09	10.62
Nose	7	878	125	1,601.67	228.80	1	16	16	14.16	14.16
Cheek	4	104	26	136.90	34.22	3	59	30	96.13	32.71
Jaw	2	156	78	286.30	143.15	1	9	9	2.50	2.50
Teeth										
Face (n.o.c.)	6	79	13	72.62	12.09	14	337	25	594.65	42.49
Neck	4	162	38	266.75	66.69	3	69	23	115.92	38.64
<i>Trunk—</i>										
Vertebra										
Back (external)	1	13	13	11.25	11.25	1	256	256	1,304.63	1,304.63
Ribs	72	2,077	29	3,635.34	50.48	66	2,339	35	4,568.31	69.07
Thorax	42	1,673	29	2,759.61	65.70	47	1,637	35	3,236.64	68.96
Abdomen	15	440	29	690.84	46.06	14	333	24	665.68	47.54
Groin	4	64	16	116.12	29.03	5	153	32	187.92	37.59
Pelvic girdle	7	174	25	235.00	40.71	5	88	17	175.36	35.07
Genital organs	8	1,212	151	1,471.14	183.89	5	365	73	741.23	148.26
Hernia	10	517	52	985.00	98.50	8	362	45	555.51	69.31
<i>Upper Extremities—</i>										
Scapula	11	767	70	1,199.87	109.08	8	460	58	834.66	104.33
Clavicle	2	96	48	185.60	92.75	2	131	65	300.08	150.04
Shoulder girdle, general	6	296	49	631.75	99.96	6	387	64	865.76	142.62
Humerus	23	834	36	1,477.24	64.23	23	547	24	961.93	41.82
Upper arm	2	153	76	218.12	109.06	1	60	60	140.00	140.00
Elbow	5	63	14	60.64	12.11	5	143	28	286.78	57.15
Radius	15	754	50	1,429.09	95.27	12	402	33	766.08	63.84
Ulna	11	533	48	996.49	90.56	7	494	69	1,112.46	158.92
Radius and ulna	3	85	28	123.17	41.06	1	82	82	117.00	117.00
Forearm	2	243	121	230.23	115.14	4	259	66	438.77	109.64
Wrist	23	233	11	1,211.23	52.66	14	312	22	629.50	44.96
Arm, general	36	1,366	37	2,846.50	66.15	28	1,116	43	2,377.73	88.14
	6	399	67	783.00	130.50	4	159	15	81.07	20.27

Hand, general	139	3,579	25	5,979.53	43.02	127	2,546	20	4,186.41	32.90
Thumb	41	961	23	1,644.22	37.42	28	642	23	1,263.80	45.13
Index finger	34	813	24	1,301.77	38.20	39	872	22	1,623.65	41.63
Middle finger	42	898	21	1,976.00	32.76	27	696	26	1,811.45	48.37
Ring finger	38	887	23	1,453.60	38.25	27	563	21	1,981.33	36.34
Little finger	28	658	23	1,068.81	37.81	32	1,040	33	2,356.33	73.63
<i>Lower Extremities</i>										
Femur	3	500	167	916.50	305.50	3	237	79	353.62	119.54
Upper leg	20	1,621	81	3,194.97	159.75	25	600	24	1,136.47	45.46
Patella	2	77	38	139.00	69.50	1	13	13	11.25	11.25
Knee	32	1,582	49	2,857.04	89.23	32	1,139	36	2,064.71	64.52
Tibia	7	1,147	167	2,005.44	286.49	4	359	90	696.94	174.24
Fibula	7	712	102	1,224.26	174.90	7	307	44	630.98	90.14
Tibia and fibula	7	1,099	157	1,897.50	291.07	4	707	177	1,290.43	315.11
Lower leg	40	1,547	38	2,784.47	69.61	45	1,504	33	2,999.43	66.65
Leg, general	7	514	73	917.00	231.00	11	442	40	752.42	68.40
Ankle	51	2,064	41	3,640.85	71.39	49	1,739	35	3,496.57	71.42
Metatarsus	20	937	47	1,833.50	91.87	12	456	38	904.29	75.86
Instep	31	815	26	1,356.33	43.76	30	603	20	1,098.54	34.62
Foot	49	1,449	29	2,485.39	50.72	43	1,310	30	2,435.43	56.64
Both feet	34	928	27	1,458.33	42.69	3	80	27	1,70.33	56.78
Great toe	19	377	188	570.43	30.02	36	780	20	1,176.20	32.64
Lesser toe	2	51	26	102.00	51.00	11	263	24	511.16	46.47
All toes	2	51	26	102.00	51.00	5	150	30	214.86	42.97
Total temporary disabilities	1,041	39,087	38	\$66,827.16	\$65.26	940	28,499	30	\$54,075.94	\$57.82

TABLE No. 3—Continued
 Permanent Partial Disability—Amount of Compensation Specified—Dismemberment or complete loss of use

Location of injury	No. cases	Days lost	Year ending June 30, 1917				Year ending June 30, 1918					
			Average days per case	Compensation		Average compensation per case	No. cases	Days lost	Average days per case	Compensation		Average compensation per case
				Temporary	Permanent					Temporary	Permanent	
Eye	10	1,165	116	\$1,721.66	\$14,281.32	\$1,600.30	6	552	92	\$1,226.87	\$8,576.71	\$1,633.93
Ear							2	119	59	284.00	1,155.05	709.52
Arm												
Hand	2	390	180	493.50	2,767.27	1,630.35	2	370	135	747.83	4,783.60	2,765.71
Thumb	2	81	40	141.40	1,567.07	853.23				984.31	3,107.31	632.02
First finger	6	561	73	1,011.25	2,938.02	658.21	6	481	90	36	225.63	536.78
Second finger	1	115	115	214.65	392.00	606.55	2	72	36	310.00	699.05	504.52
Third finger	3	196	65	392.53	890.00	420.84	2	150	75	683.47	1,440.00	351.41
Fourth finger	3	393	128	594.23	524.00	372.76	6	260	43	420.00	2,775.00	3,186.00
Leg	2	240	240	490.00	2,493.32	2,973.32	3	360	360	1,310.05	6,908.52	2,639.52
Foot	2	576	288	1,054.23	4,297.20	2,690.71	2	517	172	336.60	785.71	551.65
Great toe	1	168	168	226.28	230.47	506.75	2	192	96	7.33	137.50	144.58
Lesser toe	1	63	63	117.60	140.00	257.60	1	11	11			
Total scheduled permanent partial disabilities	32	3,908	122	\$6,447.38	\$30,553.67	\$1,156.44	33	3,074	93	\$6,551.88	\$30,847.88	\$1,133.30

TABLE No. 3--Continued

Permanent partial disability—Compensation not specified—Partial loss of use, dismemberment of part of extremity or multiple injuries												
Location of injury	Year ending June 30, 1917						Year ending June 30, 1918					
	No. cases	Days lost	Average days per case	Compensation		Average compensation per case	No. cases	Days lost	Average days per case	Compensation		Average compensation per case
				Temporary total	Permanent partial					Temporary total	Permanent partial	
Eye	12	1,415	118	\$2,658.02	\$7,495.29	\$346.11	14	1,104	79	\$2,356.25	\$12,092.73	\$1,032.10
Ear	3	94	31	177.40	4,031.80	1,403.06	5	343	69	762.90	5,677.89	1,288.16
Scalp	1	120	120	240.00	530.90	770.90						
Teeth	6	70	12	75.87	330.00	67.64	8	417	52	380.01	1,887.65	284.71
Vertebra	5	1,626	325	3,066.00	9,561.77	2,525.55	7	1,869	267	3,724.22	11,685.66	2,201.41
Back (external)								1,047	185	1,899.18	2,471.36	874.11
Ribs	1	118	118	211.72	1,051.97	1,263.69	2	390	195	961.00	1,544.82	1,102.91
Pelvic girdle	4	3,702	925	2,928.75	4,756.71	1,921.36	3	143	48	319.00	1,070.00	463.00
Arm	9	1,289	143	2,358.96	9,396.91	1,305.09	8	1,809	226	3,412.07	6,231.06	1,211.64
Hand	12	1,690	141	3,150.68	9,949.27	1,091.66	6	437	73	991.12	5,269.59	1,043.45
Thumb	3	163	54	309.92	828.76	379.54	8	488	61	1,105.11	2,996.47	512.69
First finger	13	602	46	1,050.89	3,098.93	319.22	9	347	39	1,709.83	2,144.10	317.10
Second finger	7	442	63	851.32	1,092.44	277.68	8	292	36	692.99	1,245.31	231.04
Third finger	1	34	34	58.62	131.25	189.87	8	129	32	272.40	540.63	203.25
Fourth finger	3	87	29	155.50	315.00	155.33	6	275	46	537.71	654.00	206.95
Two or more fingers	16	1,350	84	2,809.77	11,065.95	867.24	12	860	72	1,520.58	6,235.81	646.37
Leg	16	3,700	231	7,028.73	8,449.80	967.40	10	1,771	177	3,626.06	5,951.06	928.74
Foot	10	2,116	212	3,913.32	4,928.62	884.18	7	1,141	163	2,443.66	4,258.40	957.44
Great toe	1	84	84	137.19	171.50	308.69	2	171	85	373.30	3,350.00	361.65
Lesser toe												
Two or more toes	2	287	144	414.27	699.13	555.70						
Total nonscheduled permanent partial disabilities	125	18,939	152	\$31,696.92	\$77,875.89	\$675.78	124	13,033	105	\$25,937.39	\$71,866.52	\$788.90

TABLE No. 3—Continued
Fatalities

	Year ending June 30, 1917				Year ending June 30, 1918			
	No. cases	Number known dependents	Compensation awarded dependents		Number known dependents	Funeral benefits	Compensation awarded dependents	
			Total (P.W.)	Average per case			Total (P.W.)	Average per case
No dependents.....	12	None	\$1,444.32		None	\$1,119.00*	\$16,976.00	\$1,534.10
Liability estimated, open cases.....	6	9	739.76	\$2,250.00	9	1,332.60	22,262.68	5,670.66
Widow only.....	4	4	500.00	13,874.15	4	500.00	22,262.68	5,670.66
Widow and one child.....	2	4	250.00	8,675.34	4	375.00	13,864.94	6,294.98
Widow and two children.....	2	4	250.00	7,395.96	4	500.00	28,193.62	6,548.40
Widow and three children.....	2	16	500.00	20,511.20	1	125.00	10,540.55	10,540.55
Widow and four children.....	2	10	250.00	10,406.60	4	250.00	17,908.88	8,954.42
Children only.....	10	13	1,260.00	10,436.74	2	250.00	2,013.33	1,006.66
Parents.....					4	500.00	6,933.53	1,733.38
Sister.....					(1)	(1)	693.60	693.60
Total fatal cases.....	43	62	\$5,184.07	\$85,098.99	58	\$4,951.60	\$122,026.28	\$3,211.22

*Includes \$242 paid for special operation on James Tunney in endeavor to save his life.

†Included above with case of dependent parents.

‡Includes two open cases, valued at \$5,000 each, of widow and children in Austria.

TABLE No. 4
Frequency of Accidents by Industries and Extent of Disability
Fourth Fiscal Year, July 1, 1916-June 30, 1917

Industry	Number full-time workers ^a	Pay-roll exposure	Number of tabulatable accidents				Rates	
			Total	Death and permanent total disability	Permanent partial disability	Temporary disability		Per 1,000 full-time workers
						Over 2 weeks	1 to 2 weeks under	
Copper mining.....	629	\$966,775.90	92	7	12	40	13	146
Gold and silver mining.....	3,404	5,245,281.16	727	15	68	412	119	213
Miscellaneous metal mining.....	577	\$24,538.51	79	13	5	53	11	137
<i>Classes I and 2—Mining and Ore Reduction—</i>								
Copper mining.....								9.52
Gold and silver mining.....								13.86
Miscellaneous metal mining.....								9.58

	72	87,042.18	12	1	6	2	3	166	13.79
Mining, nonmetals.....									
Total mining.....	4,682	\$7,123,617.75	910	86	511	145	143	194	12.77
Ore milling, moist way.....	836	\$1,266,900.57	103	7	48	17	31	123	8.13
Plaster milling.....	45	\$7,396.00	1				1	25	1.74
Smelting.....	103	\$53,414.83	25	3	6	3	12	243	16.29
Total ore reduction.....	984	\$1,477,711.40	129	10	54	20	44	131	8.73
All other, Classes 1 and 2.....	403	\$568,546.98	20	1	11	1	6	50	3.518
Total Classes 1 and 2.....	6,069	\$9,169,876.13	1,059	97	576	166	193	173	11.52
<i>Class 3—Nevada Consolidated Copper Co.—</i>									
Underground mining (Cav. system).....	382	\$605,982.26	433	20	131	63	212	1,133	71.45
Open pit, steam shovel.....	214	\$24,633.14	102	7	17	14	60	477	31.42
Smelting.....	912	\$1,255,069.27	81	3	26	14	36	89	6.40
Crushing and concentration.....	878	\$1,176,207.80	42	3	12	7	18	48	3.57
Surface, general and clerical.....	680	\$883,273.06	71	5	30	6	26	104	7.95
Total Class 3.....	3,066	\$4,255,165.53	729	38	216	104	352	238	17.09
<i>Class 4—Railroads—Total Class 4.....</i>	418	\$431,054.51	46	4	12	5	20	110	10.67
<i>Class 5—Public Utilities—Total Class 5.....</i>	488	\$447,366.09	16	1	8	1	5	33	3.58
<i>Class 6—Municipal—Total Class 6.....</i>	1,540	\$1,464,694.18	8	1	7			6	0.54
<i>Class 7—Miscellaneous—</i>									
Construction, building.....	55	\$73,818.06	7	3	2		2	127	9.48
Logging and lumbering.....	297	\$50,511.33	36	6	12	6	12	121	14.37
Packing-houses.....	137	\$37,397.70	11	3	4	1	3	80	7.98
All others.....	1,350	\$1,444,841.46	73	8	47	7	9	54	5.05
Total Class 7.....	1,839	\$1,906,568.55	127	20	65	14	26	69	6.66
Total all classes.....	13,420	\$17,704,724.99	1,985	161	884	290	596	148	11.19

*360 days of eight hours each.

†One case permanent total disability included.

TABLE No. 5
Frequency of Accidents by Industries and Extent of Disability
Fifth Fiscal Year, July 1, 1917-June 30, 1918

Industry	Number full-time workers*	Pay-roll exposure	Total	Death	Number of tabulatable accidents			Rates	
					Permanent partial disability	Over 2 weeks	Temporary disability 1 to 2 weeks	Per 1,000 full-time workers	Per \$100,000 pay-roll
<i>Classes 1 and 2—Mining and Ore Reduction—</i>									
Copper mining.....	1,161	\$1,954,413.14	233	3	29	97	30	200	11.98
Gold and silver mining.....	2,806	4,990,388.44	679	17	42	303	118	199	242
Miscellaneous metal mining.....	426	700,907.63	78	2	3	31	13	29	11.13
Mining, nonmetals.....	88	122,147.14	21	1	4	12	1	4	239
Total mining.....	4,481	\$7,767,836.35	1,011	22	78	443	162	306	246
Ore milling, moist way.....	782	\$1,293,873.16	110	4	21	38	14	33	141
Plaster milling.....	49	70,841.34	4	—	—	1	2	1	8.60
Smelting.....	137	\$12,341.88	72	—	4	14	10	44	522
Total ore reduction.....	968	\$1,677,056.33	186	1	25	53	26	78	192
All other, Classes 1 and 2.....	494	\$777,053.38	27	—	2	13	4	8	54
Total Classes 1 and 2.....	5,943	\$10,221,946.06	1,224	26	105	509	192	392	206
<i>Class 3—Nevada Consolidated Copper Co.—</i>									
Underground mining (Cav. system).....	394	\$741,210.31	219	3	10	43	27	136	556
Open pit, steam shovel.....	638	\$71,143.79	52	—	2	11	10	29	82
Smelting.....	1,024	1,682,799.48	66	—	13	12	13	18	56
Crushing and concentration.....	783	1,255,556.38	49	3	6	17	8	15	3.90
Surface, general and clerical.....	162	286,518.06	65	1	3	27	15	19	378
Total Class 3.....	3,001	\$4,947,227.02	441	7	34	110	73	217	146
<i>Class 4—Railroads—Total Class 4.....</i>	364	\$484,976.64	42	—	—	15	3	24	115
<i>Class 5—Public Utilities—Total Class 5.....</i>	484	\$473,119.32	18	—	1	7	3	7	37
<i>Class 6—Municipal—Total Class 6.....</i>	1,464	\$1,774,804.92	34	3	2	13	1	15	23
<i>Class 7—Miscellaneous—</i>									
Construction, building.....	82	\$119,619.61	24	—	3	7	2	12	293
									20.07

Logging and lumbering.....	907	\$72,973.08	37	5	12	5	15	179	13.58
Packing-houses.....	172	\$20,636.08	71	4	10	5	50	412	36.60
All others.....	1,253	\$1,549,518.32	92	6	35	13	37	73	5.94
Total Class 7.....	1,714	\$2,142,447.28	224	18	64	25	114	180	10.45
Total all classes.....	12,970	\$20,044,821.25	1,971	160	718	297	767	152	9.88

*360 days of eight hours each.

TABLE No. 6
Severity of Injuries by Industries and Extent of Disability
Fourth Fiscal Year, July 1, 1916-June 30, 1917

Industry	*Number full-time workers	Pay-roll exposure	Total	Days lost due to—			Rates			
				Death	Permanent partial disability	Temporary disability	Over 2 weeks	1 to 2 weeks	1 week and under	Days lost per 1,000 full-time workers	Days lost per $100,000 pay-roll
<i>Classes 1 and 2—Mining and Ore Reduction—</i>										
Copper mining.....	629	\$966,775.90	49,175	42,000	5,576	1,379	187	83	78,179	5,086
Gold and silver mining.....	3,404	5,245,231.16	162,728	90,000	55,646	16,320	1,306	456	47,804	3,104
Miscellaneous metal mining.....	577	824,538.51	29,090	418,000	7,103	3,832	124	31	50,415	3,528
Mining, nonmetals.....	72	87,042.18	404	-----	99	275	25	5	5,611	0,464
Total mining.....	4,682	\$7,123,617.75	241,397	150,000	68,424	21,806	1,592	575	51,559	3,389
Ore milling, moist way.....	836	\$1,266,900.57	10,533	-----	8,429	1,836	180	88	12,599	0,831
Plaster milling.....	45	57,396.00	3	-----	-----	-----	-----	-----	-----	-----
Smelting.....	103	153,414.83	11,164	6,000	3,866	224	31	43	106,389	7,277
Total ore reduction.....	984	\$1,477,711.40	21,700	6,000	12,295	2,060	211	134	22,056	1,468
All other, Classes 1 and 2.....	403	\$568,546.98	6,602	6,000	120	456	8	18	16,382	1,161
Total Classes 1 and 2.....	6,069	\$9,169,876.13	275,699	162,000	80,839	24,322	1,811	727	45,428	3,006
<i>Class 3—Nevada Consolidated Copper Co.—</i>										
Underground mining (Cav. system).....	382	\$605,982.26	73,580	42,000	25,461	4,617	656	826	192,555	12,138
Open pit, steam shovel.....	214	324,633.14	33,421	24,000	7,406	1,647	182	206	156,172	10,295
Smelting.....	912	1,255,069.27	14,952	12,000	1,584	1,087	158	123	16,398	1,132
Crushing and concentration.....	878	1,176,207.80	15,943	12,000	3,273	523	70	177	18,158	1,365
Surface, general and clerical.....	680	883,273.06	30,067	24,000	4,782	1,099	62	124	44,216	3,366
Total Class 3.....	3,066	\$4,265,165.53	167,943	114,000	42,506	8,973	1,108	1,356	54,775	3,987
<i>Class 4—Railroads—Total Class 4.....</i>										
Total Class 4.....	418	\$431,054.51	29,332	24,000	4,706	548	51	27	70,172	6,796
<i>Class 5—Public Utilities—Total Class 5.....</i>										
Total Class 5.....	488	\$447,366.09	7,170	6,000	820	323	7	20	14,688	1,603
<i>Class 6—Municipal—Total Class 6.....</i>										
Total Class 6.....	1,540	\$1,484,694.18	415	-----	139	276	-----	-----	289	0,280
<i>Class 7—Miscellaneous—Construction, building.....</i>										
Total Class 7.....	55	\$73,818.06	2,649	-----	2,453	189	-----	7	48,163	3,588

Logging and lumbering.....	297	250,511.33	5,351	4,975	760	77	39	19,700	2,336
Packing-houses.....	137	137,397.70	3,630	3,451	150	13	16	28,496	2,642
All others.....	1,350	1,444,841.46	18,998	4,726	2,146	76	40	14,065	1,314
Total Class 7.....	1,839	\$1,906,568.56	31,118	15,605	3,245	166	102	17,013	1,632
Totals all classes.....	13,420	\$17,704,724.99	506,677	144,615	37,687	3,143	2,232	37,680	2,856

*360 days of eight hours each. †One case permanent disability included.

NOTE—In accordance with recommendations of Committee on Statistics and Compensation Cost of the International Association of Industrial Accident Boards and Commissions, each death and permanent total disability case is considered equivalent to loss of 6,000 working days, and each per cent permanent partial disability the loss of 60 days. The actual time lost is shown for temporary disabilities.

TABLE No. 7
Severity of Injuries by Industries and Extent of Disability
Fifth Fiscal Year, July 1, 1917-June 30, 1918

Industry	*Number full-time workers	Pay-roll exposure	Total	Death	Days lost due to—			Rates		
					Permanent partial disability	Over 2 weeks	1 to 2 weeks	Temporary disability 1 week and under	Days lost per 1,000 full-time workers	Days lost per \$100,000 pay-roll
<i>Classes 1 and 2—Mining and Ore Reduction</i>										
Copper mining.....	1,161	\$1,964,413.14	42,863	18,000	20,312	4,025	331	195	36,916	2,193
Gold and silver mining.....	2,806	4,990,368.44	149,611	102,000	35,049	10,660	1,366	606	53,318	2,998
Miscellaneous metal mining.....	426	700,807.63	17,965	12,000	4,620	1,186	128	81	42,218	2,566
Mining, nonmetals.....	88	122,147.14	5,449	.....	5,023	403	12	11	61,920	4,463
Total mining.....	4,481	\$7,767,836.35	215,906	132,000	65,004	16,184	1,827	893	48,183	2,780
Ore milling, moist way.....	782	\$1,298,878.16	43,316	24,000	17,514	1,553	182	87	55,391	3,347
Flour milling.....	149	70,841.14	1,452	.....	.....	.....	26	.....	1,061	73
Smelting.....	137	312,341.83	1,836	.....	1,065	551	114	76	13,401	588
Total ore reduction.....	968	\$1,677,056.33	45,204	24,000	18,609	2,140	292	163	46,698	2,695
All other, Classes 1 and 2.....	494	\$777,053.38	2,980	.....	2,301	576	52	51	6,082	384
Total Classes 1 and 2.....	5,943	\$10,221,946.06	264,092	156,000	85,914	18,900	2,171	1,107	44,437	2,584
<i>Class 3—Nevada Consolidated Copper Co.—</i>										
Underground mining (Cav. system).....	394	\$741,210.31	27,046	18,000	7,079	1,155	299	513	68,644	3,649
Open pit steam shovel.....	638	971,143.78	1,334	.....	644	476	109	106	2,091	137
Smelting.....	1,024	1,682,799.48	3,003	.....	2,398	406	135	60	2,933	178
Crushing and concentration.....	783	1,255,555.88	25,128	18,000	6,254	729	183	62	32,091	2,001
Surface, general and clerical.....	182	296,518.08	16,107	6,000	5,332	1,453	162	65	38,064	5,388
Total Class 3.....	3,001	\$4,947,227.02	72,518	42,000	24,707	4,224	778	909	24,084	1,466
<i>Class 4—Railroads—Total Class 4.....</i>	364	\$484,976.64	809	.....	.....	783	34	42	2,223	167
<i>Class 5—Public Utilities—Total Class 5.....</i>	484	\$473,119.32	398	.....	161	175	40	12	802	82
<i>Class 6—Municipal—Total Class 6.....</i>	1,464	\$1,774,804.92	19,621	18,000	926	663	12	20	13,393	1,105
<i>Class 7—Miscellaneous—</i>										
Construction, building.....	82	\$119,619.61	1,329	.....	999	289	26	15	16,207	1,071

Logging and lumbering.....	207	272,673.08	2,721	.....	1,853	7,941	53	41	13,145	988
Packing-houses.....	172	200,696.06	14,882	12,000	2,890	409	51	42	86,623	7,418
All others.....	1,253	1,549,518.62	11,211	6,000	3,482	1,394	149	92	8,947	723
Total Class 7	1,714	\$2,142,447.29	30,143	18,000	8,714	10,083	279	190	17,686	1,407
Totals all classes	12,970	\$20,044,521.25	387,571	234,000	120,422	34,728	3,314	2,180	29,857	1,934

* 360 days of eight hours each.

NOTE—In accordance with recommendations of Committee on Statistics and Compensation Cost of the International Association of Industrial Accident Boards and Commissions, each death and permanent total disability case is considered equivalent to the loss of 6,000 working days, and each per cent permanent partial disability the loss of 60 days. The actual time lost is shown for temporary disabilities.

EXPERIENCE OF ACCIDENT BENEFIT FUND
Twelve Months from July 1, 1917, to June 30, 1918

Classes	No. con- tributors	No. full-time workers	Pay-roll exposed	Earned premium	Total benefits	No. cases	Rate of accident benefit cost		
							Per case	Per \$100 pay-roll	Per full-time worker per year
<i>Classes 1 and 2—Mining and ore reduction</i>	109	376	\$611,511.49	\$13,553.90	\$4,630.65	68	\$68.10	\$0.757	\$12.31
<i>Class 5—Public utilities</i>	12	57	\$72,107.01	\$661.01	\$80.50	2	\$45.25	\$0.130	\$1.59
<i>Class 6—Municipal</i>	56	1,464	\$1,774,804.92	\$6,345.12	\$1,800.36	30	\$60.01	\$0.100	\$1.23
<i>Class 7—Miscellaneous—</i>									
Auto dealers, auto stages	15	23	\$34,846.26	\$308.53	\$51.50	4	\$12.88	\$0.148	\$2.24
Contractors	32	61	\$0,092.78	1,798.39	345.00	6	57.50	.380	5.66
Hotels, saloons, restaurants	11	68	64,976.26	293.66	64.50	3	21.50	.100	.95
Laundries	1	6	5,029.33	22.64		0			
Miscellaneous manufacturing	12	69	104,109.53	1,001.45	294.60	7	42.08	.283	4.27
Packing-houses	1	138	157,929.98	1,976.28	1,795.95	60	29.93	1.137	13.01
Planting-mills	2	24	32,242.20	875.69	101.00	4	25.25	.313	4.21
Printing	5	20	30,486.50	97.58		0			
Stores, mercantile	63	230	279,404.43	1,837.06	385.25	12	30.44	.131	1.59
Teaming	6	24	40,743.88	823.70	239.25	4	59.81	.587	9.96
Total Class 7	148	663	\$339,809.15	*\$8,534.98	\$3,257.05	100	\$32.57	\$0.388	\$4.91
Totals all classes	325	2,560	\$3,298,232.57	\$29,095.01	\$9,778.56	200	\$48.89	\$0.272	\$3.51

*Differs from Auditor's report by amount of earned premiums taken between date of Auditor's report and January 1, 1919.

CONDENSED CUMULATIVE STATEMENT STATE INSURANCE FUND

Experience by Classes

For sixty-six months, July 1, 1913-December 31, 1918

Class	Premium income total	Total compensation	Reserve and administra- tion expense	Balances
1. Mining.....	\$1,019,164.86	\$809,908.64	\$151,196.03	\$58,060.19 Surplus.
2. Ore reduction.....	139,471.52	143,891.29	19,828.78	24,243.56 Deficit.
3. Nevada Consolidated Copper Company.....	356,194.81	271,048.47	51,942.42	32,203.92 Surplus.
4. Railroads.....	42,988.85	29,611.62	6,616.24	6,760.99 Surplus.
5. Public utilities.....	41,857.17	15,517.26	6,448.59	19,891.32 Surplus.
6. State, counties, schools, etc.....	60,216.65	41,439.27	9,507.66	9,269.72 Surplus.
7. Miscellaneous.....	136,643.94	124,359.81	20,063.82	8,799.69 Deficit.
	\$1,794,537.80	\$1,435,776.36	\$265,623.55	\$93,137.89 Surplus.
				64,552.09 Interest and discount.
				\$147,689.98 Net surplus.

GEO. K. EDLER

CERTIFIED PUBLIC ACCOUNTANT

RENO, NEVADA

December 1, 1918.

HON. EMMET D. BOYLE,
HON. GEO. B. THATCHER,
HON. A. J. STINSON,

Industrial Commission Board, State of Nevada, Carson City.

GENTLEMEN: In accordance with my appointment by your board, I have audited the accounts of the Nevada Industrial Commission for the year ending June 30, 1918. This audit, in connection with those previously made by me, makes a complete audit of the accounts from July 1, 1913, the date of the organization of the Commission, to June 30, 1918.

I submit herewith, as a part of this report, statements designated as Exhibits Nos. 1 to 6, and Schedules 1 and 2, which follow. I certify that they are correct and in accordance with the accounts of the Commission. All receipts are accounted for and disbursements are evidenced by proper vouchers and correct accounting has been made.

Cash balances have been verified and securities owned by the State Insurance Fund are found to be in the hands of the State Treasurer.

Respectfully submitted,

GEO. K. EDLER,
Certified Public Accountant.

Exhibit No. 1

NEVADA INDUSTRIAL COMMISSION

STATE INSURANCE FUND

Receipts and Disbursements—July 1, 1913 to June 30, 1918

RECEIPTS	To June 30, 1917	Year ending June 30, 1918	Totals	Total
Premiums collected	\$1,104,910.59	\$518,217.44	\$1,623,128.03	
Interest	4,323.05	14,750.57	19,073.62	
	<u>\$1,109,233.64</u>	<u>\$532,968.01</u>		\$1,642,201.65
DISBURSEMENTS				
Compensation paid	\$551,607.33	\$274,273.13	\$825,880.46	
Administration expenses	124,975.52	34,278.23	159,253.75	
Furniture and fixtures	5,162.57	4,025.78	9,188.35	
	<u>\$681,745.42</u>	<u>\$312,577.14</u>		904,322.36
Balance in fund, June 30, 1918				<u>\$647,879.09</u>

DISTRIBUTED AS BELOW

Cash (see Schedule No. 1)	\$125,598.97	
Investments (see Schedule No. 2)	522,280.12	
		<u>\$647,879.09</u>

Exhibit No. 2

NEVADA INDUSTRIAL COMMISSION

STATE INSURANCE FUND

Assets and Liabilities—June 30, 1918

ASSETS		
Cash (see Schedule No. 1)	\$125,598.97	
Investments (see Schedule No. 2)	522,280.12	
Accrued interest	8,439.83	
Furniture and fixtures	\$9,188.35	
Less depreciation	<u>2,694.71</u>	
		6,493.64
Total assets		<u>\$662,511.56</u>
LIABILITIES		
Reserve for pensions allowed	\$243,976.02	
Reserve for liability account of pending claims, estimated	151,622.09	
Reserve fund	86,691.57	
Premiums paid in advance	18,933.50	
Unclaimed vouchers	<u>1,666.58</u>	
Total liabilities		<u>502,890.36</u>
Assets in excess of liabilities		<u>\$159,621.20</u>

Exhibit No. 3

NEVADA INDUSTRIAL COMMISSION

STATE ACCIDENT BENEFIT FUND

Receipts and Disbursements to June 30, 1918

RECEIPTS	
Premium collections.....	\$29,654.18
DISBURSEMENTS	
Benefits paid.....	\$8,492.86
Administration expenses.....	2,611.12
Total disbursements.....	11,103.98
Cash balance, June 30, 1918.....	\$18,550.15

Exhibit No. 4

NEVADA INDUSTRIAL COMMISSION

STATE ACCIDENT BENEFIT FUND

Assets and Liabilities—June 30, 1918

ASSETS	
Cash (see Schedule No. 1).....	\$18,550.15
LIABILITIES	
Reserve for liability account of pending claims, estimated.....	\$1,285.70
Premiums paid in advance.....	1,018.98
Total liabilities.....	2,304.68
Assets in excess of liabilities.....	\$16,245.52

Exhibit No. 5

NEVADA INDUSTRIAL COMMISSION
RESULT OF OPERATIONS—STATE INSURANCE FUND
 Sixty Months—July 1, 1913, to June 30, 1918

Class	Premiums earned	Reserve fund	Net premiums	Compensation paid	Unpaid pension awards	Liability account pending claims	Total compensation	Administration	Total compensation and administration	Deficit	Surplus
1. Mining	\$922,721.00	\$49,431.15	\$873,239.85	\$490,521.58	\$130,033.84	\$83,238.89	\$703,794.31	\$33,151.68	\$736,945.99	-----	\$76,343.86
2. Ore reduction	119,918.18	5,843.82	114,074.36	82,910.00	18,988.10	15,317.29	117,215.39	12,106.09	129,321.48	-----	-----
3. Nevada Con. Copper Co.	307,292.96	16,298.32	290,994.64	149,106.56	45,768.05	32,303.26	227,167.97	31,022.22	258,190.19	-----	32,804.45
4. Railroads	38,562.90	2,418.43	36,144.47	16,657.64	6,078.48	320.33	23,056.45	3,883.04	26,949.49	-----	9,194.98
5. Public utilities	37,967.77	2,397.22	35,580.55	9,849.88	4,803.62	-----	14,653.50	3,832.96	18,486.46	-----	17,094.09
6. State, counties, cities, schools	55,663.06	3,487.50	52,175.56	12,370.11	15,553.79	11,687.97	39,611.87	5,619.34	45,231.21	-----	6,944.35
7. Miscellaneous	122,068.66	6,825.13	115,243.53	66,131.17	22,760.14	8,764.95	97,646.26	12,323.13	109,969.39	-----	5,274.14
Totals	\$1,604,194.53	\$86,691.57	\$1,517,502.96	\$827,547.04	\$243,976.02	\$151,622.69	\$1,223,145.75	\$161,948.46	\$1,385,094.21	\$15,247.12	\$147,655.87
											15,247.12
									Surplus		\$132,408.75
									Interest earned		27,513.45
									Total surplus		\$159,922.20

Administration is 10.096% of premiums earned.

Exhibit No. 6

NEVADA INDUSTRIAL COMMISSION

STATE ACCIDENT BENEFIT FUND—RESULT OF OPERATIONS

Twelve Months—July 1, 1917, to June 30, 1918

Class	Premiums earned	Benefits paid	Liability account pending claims	Total benefits	Adminis- tration	Total ben- efits and ad- ministration	Surplus
1. Mining.....	\$12,077.71	\$3,107.70	\$1,005.45	\$4,113.15	\$1,101.29	\$5,214.44	\$6,863.27
2. Ore reduction.....	1,476.19	420.50	97.00	517.50	134.59	652.09	824.10
3. Nevada Consolidated Copper Company.....							
4. Railroads.....							
5. Public utilities.....	661.01	90.50		90.50	60.25	150.75	510.25
6. State counties, cities and schools.....	6,345.12	1,714.61	85.75	1,800.36	578.62	2,378.98	3,966.14
7. Miscellaneous.....	8,075.17	3,159.55	97.50	3,257.05	786.36	3,993.41	4,081.76
Totals.....	\$28,635.20	\$8,492.86	\$1,285.70	\$9,778.56	\$2,611.12	\$12,389.68	\$16,245.52
Total surplus.....							

Administration is 9.12% of premiums earned.

Schedule No. 1

NEVADA INDUSTRIAL COMMISSION

CASH

June 30, 1918

State Treasurer	\$9,069.51	
Carson Valley Bank	26,579.61	
Auditor's petty cash	1,000.00	
Special Deposits:		
Farmers' Bank of Carson Valley, Minden	\$32,500.00	
Carson Valley Bank, Carson City	55,000.00	
Copper National Bank, Ely	10,000.00	
Scheeline Banking and Trust Company, Reno	10,000.00	
	<u>107,500.00</u>	\$144,149.12
CASH RECONCILEMENT		
State Insurance Fund	\$125,598.97	
State Accident Benefit Fund	18,550.15	\$144,149.12

Schedule No. 2

NEVADA INDUSTRIAL COMMISSION

STATE INSURANCE FUND

Investments—June 30, 1918

White Pine County 6% Lund School District bonds (par value \$6,800)	\$6,800.00
Massachusetts State 3½% bonds (par value, \$50,000)	47,525.54
Humboldt County 5½% bonds (par value, \$110,000)	110,000.00
California State 4% bonds (par value, \$25,000)	25,157.57
California State Highway 4% bonds (par value, \$25,000)	25,625.57
Mississippi State 4½% bonds (par value, \$25,000)	25,616.70
Maryland State 4% bonds (par value, \$25,000)	25,413.33
Douglas County 5% bonds (par value, \$1,500)	1,390.00
Cuyahoga County, Ohio, 4½% bonds (par value, \$25,000)	25,818.33
Washoe County 5% bonds (par value, \$1,000)	1,000.00
U. S. Liberty Loan 4% bonds (par value, \$108,250) *	103,228.00
U. S. Treasury certificates of indebtedness (\$125,000)	125,000.00
Total	\$322,290.12

*Later converted into 4½% bonds.

STATE OF NEVADA

BIENNIAL REPORT

OF THE

Southern Nevada Agricultural Board

1917-1918

E. W. GRIFFITH, President

J. M. HEATON, Secretary



CARSON CITY, NEVADA

STATE PRINTING OFFICE

: : : : :

JOE FARNSWORTH, SUPERINTENDENT

1919



REPORT OF SOUTHERN NEVADA AGRICULTURAL BOARD

To His Excellency, EMMET D. BOYLE, Governor of Nevada.

SIR: We herewith submit the first biennial report of the Southern Nevada Agricultural Board, created by Chapter 144, Statutes of 1917, and approved March 21, 1917, and we herewith include a summarized report of the County Agricultural Agent and the Home Economics Agent, both of whom have been working largely under direction of the above board.

The system of advanced agriculture, which required the creation of the above board, was largely experimental at that time, but after some eighteen months of work we wonder why such a system had not been adopted years ago. It provides that scientific agriculture and horticulture shall be taught the farmer in his own home and on his own farm. The results of this system (in the district under direction of your Southern Nevada Agricultural Board) have exceeded even the fondest hopes of its promoters. The farmer has been taught the best method of feeding stock and poultry, so that the best results may be obtained. He has had refractory soils analyzed, and recommendations made for subjugation of the same by experts in that line. He has had his fruit trees and vines inspected, and where insect pests have been found a remedy has been suggested or material furnished for their eradication.

Diseases of cattle, sheep, hogs, and poultry have been detected before their spread has done any great damage to these industries.

HOME ECONOMICS

The Home Economics Agent has also done a splendid work in this district. The most modern method of canning fruits and vegetables, preserving meats, etc., together with suggestions on home environment, accounting and economics have largely constituted her work. Of course the past year a great deal of her time has been used in war work, as her report will show.

FUTURE WORK

This board contemplates pushing the work so well begun, and applying in a more general way, the benefits to be derived from the county agent system. In order to do this we have found that headquarters must be established with a well-equipped laboratory, and kept open each day in the week, so that farmers or others needing information may get it when they want it instead of waiting for the county agent to come in from some outside district in the county.

We would recommend this agricultural district be enlarged to include

Lincoln County and that the board be enlarged to five members—one appointed from Lincoln, and one from Nye, and three from Clark County. An annual fair should be held in the southern part of this State, which is now cut off from participation in the State Fair, and the State should assist in the establishment of the same.

Respectfully submitted,

SOUTHERN NEVADA AGRICULTURAL BOARD,

E. W. GRIFFITH, *President.*

J. M. HEATON, *Secretary.*

SUMMARY

The Southern Nevada Agricultural Board, established under Chapter 144, Statutes of 1917, was organized in April following the passage of the Act, pursuant to the appointment by the Governor of E. W. Griffith and J. M. Heaton of Las Vegas, and R. O. Gibson of St. Thomas, to constitute the board. Mr. Griffith was elected president and Mr. Heaton secretary. In May, 1917, Mr. S. E. Merrill was appointed County Agricultural Agent. On July 1st following, Miss Adelaide L. Phillips, by cooperation with the Agricultural Extension Division, was appointed Home Demonstration Agent for Clark County. These two agents are still in the service and have performed their duties to the satisfaction of the board and the people of Clark County.

ORGANIZATION OF THE WORK

Mr. Merrill's work is covered by written projects with special reference to the determination of the most economic and practical method of handling the refractory soils in the Las Vegas Valley, the introduction of new crops of economic importance, improving farm practice in relation to crops and live stock and in general the increase of acreage and greater production of field and horticultural crops in the county.

Miss Phillips's work has been with the rural women and children in relation to improving the conveniences, comfort and happiness of home life, demonstration work in connection with the preparation, canning and drying of foods, home sanitation, child welfare and hygiene.

Both the County Agent and the Home Demonstration Agent have assisted in juvenile extension work in gardening, animal husbandry, home economics, etc., among the boys and girls. In this work they were assisted a part of the time by Miss Edith Giles, employed by the United States Department of Agriculture through the Extension Division.

COUNTY AGENT WORK

The agricultural situation presented in Clark County may be briefly summarized as follows:

In the Las Vegas Valley is a large area of land which is susceptible of irrigation by means of artesian wells. The problem of water supply is of comparatively easy solution. The climatic conditions are such that where water and good soil are united enormous crops covering a wide range of plants can be grown. A relatively small portion of the area has good soil of fair depth. On the greater area, however, the soil is shallow, deficient in nitrogen and humus and more or less impregnated with salts. The problem to be worked out is an economical method of handling these soils so that the deficiency in nitrogen and humus can be supplied and the salts, so far as possible, eliminated. Mr. Merrill was selected as County Agent because of special training in the analysis of soils, soil management and the type of crops climatically adapted to Clark County.

During the biennial period Mr. Merrill has tested 130 soil samples for alkaline salts—representative of an area of 25,000 acres of land.

Sixty samples were tested for the plant food elements, representing an area of about 900 acres. These tests gave information regarding a much larger area because of the similarity of soils in surrounding portions of the valley. A succession of soil improvement demonstrations were inaugurated. These were chiefly based on the plan of growing leguminous nitrogen-producing crops, which could be successfully plowed under each season or alternate seasons as a green manure, both to add nitrogen to the soil, by bacterial growth, and humus through the decomposition of the plowed under vegetation. The crops selected were sweet clover, Kentucky blue peas, Canadian field peas, and alfalfa. Of these the sweet clover (*melilotus alba*) has proved the most successful and it is believed is the basic plant for soil enrichment.

These demonstration plots and fields should be continued until a positive determination of the particular crop or crops, the best rotation system and the period required to change each of the different classes of soils from its natural state of impoverishment to that of fertility is worked out. The importance of this problem may be understood when it is stated that from 50,000 to 100,000 acres of land are affected, the productive value of which—with the soil problem solved—would be enormous in the subtropical climate of Clark County.

EGYPTIAN LONG-STAPLE COTTON

While orchard and small fruits and vegetables of all kinds (with the exception of citrus fruits) can be successfully grown in Clark County, including figs, almonds, melons, grapes, etc., and while alfalfa and various other crops produce remarkable yields, it has been the opinion of the members of the Board and of the Agricultural Extension Division that possibly the ultimate major crop of the Las Vegas and Moapa Valleys will be Egyptian long-staple cotton.

In 1917 a small quantity of the seed of the Pima variety of long-staple cotton was obtained and, although planted late in the season, the results were encouraging. In 1918 six plots were planted on various types of soil. Only one of these plots has been completely picked to date so that definite results of the others cannot be stated. This plot yielded at the rate of 1,600 pounds of cotton per acre. Some of the other plots indicate a larger yield when completely picked. Cotton planted on some of the poorest soil in the Las Vegas Valley, lacking humus or containing considerable amounts of white alkali salts, made comparatively good yields, while corn and cane planted on the same land failed to grow at all.

Long-staple (Egyptian) cotton cannot be grown in the southern states and is only adapted to growth in portions of Arizona, New Mexico and in the Imperial Valley, California, aside from southern Nevada. This cotton is used in automobile tire fabric and in all cotton fabrics requiring great tensile strength. There is a large demand for it at prices ordinarily from 50 per cent to 100 per cent higher than for short-staple cotton. During the war period it sold for over 60 cents per pound, while prewar prices were about 30 cents. A yield of 1,600 pounds per acre at 30 cents per pound is \$480 per acre. It is therefore of the highest importance that systematic demonstrations of the adaptability and productiveness of this crop in southern Nevada be carried on.

Insect and rodent pests, plant and animal diseases were investigated

and brought under control, different phases of the work being carried on in cooperation with the Bureau of Biological Survey and the Veterinary Department of the University.

Educational campaigns in the advantages of pure-bred live stock were conducted among the farmers and in boys and girls clubs—the children being aided to secure pure-bred hogs and their fathers encouraged by every available means to improve their herds, which has been done to the satisfaction of the farmer. Demonstrations in feeds and feeding were held and three silos have been built in the county.

Stimulation of crop production, on both large and small scales, undertaken as a war emergency, met with success. The County Agent gave his services to the council of defense by talking at meetings in the interest of the liberty loan drives and other war measures. In all lines of endeavor the County Agent and the Home Demonstration Agent have had the cordial assistance of the people with whom they have worked, which has resulted in a better understanding of the problems involved and in mutual cooperation to work them out.

In the past two years there has been a very large increase in farm production in Clark County. Exact statistical data is difficult to obtain in most instances. Thresher record of grain production were required during 1917 and 1918. In 1917, 36,917 bushels of grain, chiefly wheat, were produced; in 1918, 89,700 bushels—an increase of 243 per cent.

HOME DEMONSTRATION WORK

FARM AND HOME BUREAUS

Large quantities of fruits and vegetables are grown in semitropical southern Nevada and the canning and preserving of food products was probably the most important work undertaken. The woman membership of farm bureaus totaled 215 and these women, working under the direction of the Home Demonstration Agent, canned 75,000 quarts of fruits and vegetables and dried 25,000 pounds of vegetables. Many products were preserved in brine and in other ways. Five thousand quarts of meats were canned.

The Agent was the means of introducing the fireless cooker to the housewives of the county and it has proved a real comfort in many homes.

Demonstrations and instruction were given throughout the county in sewing, mending, cleaning, renovating and remodeling clothing. The value of the fabric thus saved is estimated to be \$1,500.

CHILD WELFARE

Special attention was given to child welfare work, including the care and feeding of infants, physical, mental and moral development of children, personal hygiene, etc., to mothers in the rural villages, farms and isolated districts where physician or nurse is seldom seen. A "Better Babies" campaign and plans for a Child Welfare Day in community centers were temporarily interrupted by the influenza epidemic, but will be resumed as soon as weather conditions permit. Eight communities have taken up this work and ten have endorsed the sanitation and health projects inaugurated by the agent.

BOYS AND GIRLS CLUB WORK

About 250 boys and girls were enrolled for poultry raising, one girl raising 64 turkeys from four turkey hens. The gardening clubs were supplied with government seed, as were also numerous families for the "back-yard" garden. Miss Phillips was assisted in the direction of this work by County Agent Merrill and Miss Edith C. Giles, temporary club leader. Seventy-five girls were enrolled in sewing and cooking clubs. Over 100 girls were enrolled in canning clubs, one member's record for the season being 13 dozen quarts of fruits and vegetables. The Pig Club had an enrollment of 50, one-half of whom were supplied with pure-bred animals.

WAR WORK

An important part of the year's work was in connection with the war propaganda. First came the organization of the Red Cross, the formation of four rural auxiliaries and instruction in knitting; then the organization of the Junior Red Cross. Miss Phillips was made Vice-Chairman of the Woman's Committee of the National Council of Defense in the county and is the County Chairman of the Woman's Liberty Loan Committee. She organized the Belgian Relief Committee of Clark County and has cooperated with the Salvation Army War

Fund Committee, the Young Men's and Young Women's Christian Associations, and conducted the survey of the nursing resources of the county for the Red Cross.

Every assistance was given the County Food Administrator in his work of impressing upon the minds of the people the need for food conservation. Bulletins and posters were distributed and demonstrations given in war-time cooking and bread-making; thirteen communities adopted the projects outlined in the canning and drying of food and in war-time cooking and bread-making.

IN GENERAL

Bulletins on special subjects of vital interest to women but too lengthy to be readily available for the busy housewife were rewritten in condensed form and distributed to those interested. Fifteen kitchens were remodeled and two hundred fifty pieces of improved household equipment were adopted.

The territory covered by Miss Phillips is large and the journeys between towns long. One hundred-seventy home visits were made and approximately sixty lectures and demonstrations given to further the work of the Extension Division. The success of the effort made was due in large measure to the cordial cooperation of the women members of the farm bureaus.

FINANCIAL STATEMENT

Disbursement From Funds of the Southern Nevada Agricultural Board May 22, 1917, to December 31, 1918.

State appropriation		\$5,000.00
Salary S. E. Merrill, County Agent	\$1,075.00	
Salary Miss A. L. Phillips, Home Demonstrator	505.00	
Traveling expenses, S. E. Merrill	297.94	
Traveling expenses, Miss Phillips	416.64	
Expenses Southern Nevada Agricultural Board	46.68	
Automobile expense account	1,049.00	
Automobile, furniture and equipment	946.32	
Office rent, gas, lights, etc.	364.35	
Supplies and miscellaneous	299.04	
		\$5,000.00
<i>Disbursements From Clark County Treasury</i>		
Salary S. E. Merrill	\$274.98	
Traveling expenses S. E. Merrill	69.69	
Automobile expense account	171.57	
Office rent, gas	80.00	
Supplies and miscellaneous	69.88	
		666.12
Cooperative disbursements by Agricultural Extension Division and United States Department of Agriculture		4,118.23
Total		\$9,784.35



STATE OF NEVADA

BIENNIAL REPORT

OF THE

Nevada State Racing Commission

1917-1918

GEORGE WINGFIELD, Chairman



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : JOE FARNSWORTH, SUPERINTENDENT

1919



REPORT OF NEVADA STATE RACING COMMISSION

RENO, NEVADA, January 1, 1919.

To His Excellency, the Governor of the State of Nevada, Carson City, Nevada.

SIR: I have the honor to transmit herewith the following report covering the activities of the Nevada State Racing Commission from January 1, 1917, to December 31, 1918, a period of two years:

The statement of cash received and disbursed is as follows:

Balance on hand January 1, 1917	\$1,601.00
Received from licenses and fines in year 1917	\$1,771.30
Received from licenses and fines in year 1918	984.80
	<u>2,755.90</u>
Total	\$4,356.90

<i>Disbursements</i>	
Steward	\$20.00
Medical fees Jockey Carter	10.00
Printing licenses	43.50
Surgeon for Jockey Matthews	171.00
Hospital for Jockey Matthews	425.45
Advances to Nevada State Agricultural Society (to be refunded)	921.19
	<u>1,591.14</u>

Balance on hand December 31, 1918	\$2,765.76
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As stated in the last report, this Commission is holding \$521.20 (included in the cash balance of \$2,765.76 shown above), which the Commission failed to distribute to the counties out of the collections of 1915, before I became Chairman. Now that the law has been changed so that these amounts are paid to the State Road Fund, the Commission will await instructions from you as to whether this amount should be distributed to the counties under the old law or paid to the State Treasurer under the new law.

During the year 1917 a meeting was held under the auspices of the Reno Business Men's Association from June 30 to July 4, and another from September 14 to October 20, inclusive. There was another meeting held from September 1 to September 3, under the auspices of the Labor Day Committee of Reno. In the year 1918 only one meeting was held, which was from June 15 to July 6, inclusive, held by the Reno Business Men's Association. The figures for these meetings are as follows:

	<i>Take</i>	<i>One-sixth of 8 per cent to State</i>
June 30 to July 4, 1917	\$39,944.00	\$532.58
Sept. 1 to Sept. 3, 1917	32,521.00	433.61
Sept. 14 to Oct. 20, 1917	779,923.00	10,398.97
June 15 to July 6, 1918	424,487.87	5,659.83
Totals	\$1,276,875.87	\$17,024.99

The amount due the State as shown above, viz., \$17,024.99, has been

remitted to the State Treasurer for the credit of the State Road Fund, as provided by law.

During the years 1915 and 1916 there was distributed to the county road funds a total of \$24,110.36. Adding to this the \$17,024.99 paid to the State in 1917 and 1918, a total of \$41,135.35 has gone toward road betterment in this State from the pari-mutuel commissions.

The meetings held during the past two years have been conducted in the cleanest manner possible and nothing that was the slightest bit questionable has been tolerated for an instant.

I earnestly recommend that no changes be made in the present law regarding the conduct of racing in this state.

Respectfully submitted,

GEO. WINGFIELD,
Chairman Nevada State Racing Commission.



STATE OF NEVADA

BIENNIAL REPORT

OF THE

State Assayer and Inspector

1917-1918

FRANCIS CHURCH LINCOLN
State Assayer and Inspector



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : : JOE FARNSWORTH, SUPERINTENDENT

1919



REPORT OF THE STATE ASSAYER AND INSPECTOR FOR THE YEARS 1917-1918

1. Law and Object

Chapter 234 of the Nevada Statutes of 1917 provides for a state officer to be known as the State Assayer and Inspector. Upon request of any shipper to any Nevada purchaser, it becomes the duty of the State Assayer and Inspector to take charge of a shipment in the interest of the shipper and to see that it is properly sampled and assayed. The charges for this service are fixed by law at 25 cents per ton upon lots in excess of 50 tons, and actual costs of sampling upon smaller lots. The law further provides that purchasers shall report monthly all purchases made by them.

The object of this law is to encourage the operation of small mining properties by providing a reliable and reasonable method of checking the sampling and assaying of their shipments. No matter how honest and reliable the purchaser may be, it is no more than good business for the shipper to have his weights checked, his sampling supervised, and his pulps assayed. Mining companies which are large and regular shippers can readily afford to keep an ore checker at the sampler and to employ an assayer, one of whose duties is to check the purchaser's assays. The case of the small shipper is entirely different, since he cannot afford to keep a checker at the sampler to take charge of his infrequent and irregular shipments. If the sampler is located in his neighborhood, he can go himself or send a representative each time a shipment is made without undue expense; but when his ore is sampled at a distance, the cost of supervision by this method is excessive. The State Assayer law aims to correct this condition by providing a means whereby any one in Nevada may obtain reliable ore-checking and assaying service at a reasonable cost. The provision in the law which calls for monthly reports from all ore purchasers, makes it possible for the State Assayer to acquaint all shippers with the existence, object, and mode of operation of his department.

2. History.

Governor Emmet D. Boyle appointed Dr. Francis Church Lincoln to the office of State Assayer and Inspector on July 12, 1917. The department was immediately advertised through articles written for the press of the State and through letters sent to every mine operator and ore purchaser in the State under date of July 14, 1917. The advertising was continued by sending letters monthly to all shippers whose names appeared upon the ore purchasers' reports for the preceding month and who had not employed the State Assayer. In addition to this regular method of advertising, a second general letter was sent out on April 20, 1918.

After visiting Hazen, Thompson, Tonopah, and Ely, and supervising the sampling of a number of lots in order to become thoroughly familiar with conditions, Dr. Lincoln appointed deputies at these four points to take charge of such State Assayer work as might be required at them. The appointment of these deputies occasioned the State no expense since it was arranged in every instance their pay should come from shippers' fees. R. I. Green was appointed deputy at Hazen, J. T. Ronan at Thompson,

Spark and Robb at Tonopah, and V. M. Henderson at Ely. As it turned out, the only lot supervised at Thompson was one sampled under the direction of Dr. Lincoln; but one lot was supervised at Tonopah by Spark and Robb; no lots were inspected at Ely; and practically the whole work of the department was at Hazen. There H. E. Higgins and F. T. Abbay served as deputies temporarily at times when R. I. Green was unable to handle the work. Mr. Green did so well in his capacity as Deputy State Assayer and Inspector that the Western Ore Purchasing Company offered him higher wages than the State Assayer Department could afford to pay, to take up similar work for it at one of the Utah smelters. D. H. Allen was then appointed deputy at Hazen, a position which he has filled most satisfactorily and still occupies at the present time.

Several tests were conducted at Hazen to ascertain the proper moisture correction to be applied to the apparent moisture as determined in a sample which had passed through the mill in order to make up for the loss sustained during this passage. It was found that the correction should be about one-tenth on ores running 2 per cent moisture and under and about one-sixth on ores running over 2 per cent moisture; and after the completion of the experiments these corrections were used. The dryer of the Western Ore Purchasing Company was found to be running at too high a temperature, and as the company would not correct this at first, it was decided to put in a state drier. The Western Ore Purchasing Company kindly supplied the space and some of the material required for this drier. The new drier was operated during the months of January and February, 1918, after which the company reconstructed its own drier and ran it at a lower temperature, so that the results obtained in it agreed with those secured in the state drier.

Mr. Henry E. Higgins, formerly assayer in the United States Mint at Carson City, was taken into the personal employ of Dr. Lincoln to do the assaying for the State Assayer and Inspector Department for him. All department assaying has been performed by Mr. Higgins in the State Mining Laboratory in a most careful and conscientious manner. Although the State Mining Laboratory possessed good balances, it was felt that these were scarcely delicate enough for the purposes of the State Assayer. A fine new Thompson multiple-rider button balance and an Ainsworth analytical balance were therefore purchased and used on all work of the Department.

3. Mode of Operation

Shippers desiring to employ the State Assayer are requested to notify him to that effect at the State Mining Laboratory, Reno; and also to mark their bills of lading "Care of State Assayer." Both of these steps should be taken, since occasional delays in the mail service result in holding up notifications in some instances and bills of lading in others, but rarely cause both to be delayed until lots have been sampled.

Upon receipt of a notification of shipment, the State Assayer informs his deputy at the sampler and requests him to be on the lookout for the lot. When a bill of lading is marked "Care of State Assayer," the deputy takes charge of the lot without awaiting authorization from the State Assayer.

The deputy checks the weight of the ore, supervises its sampling, and takes an independent moisture sample upon which he makes a moisture determination. After the moisture has been determined, the sample is placed in a sack and mailed to the State Assayer. As soon as the pulp

is prepared, it is mailed to the State Assayer by special delivery to insure its being assayed at the earliest possible moment. The deputy also forwards a detailed report to the State Assayer, made out upon a blank, like Form 1, attached to this report. He further calculates the charges, which, at Hazen, are 25 cents per ton on lots exceeding 20 tons in weight, and \$5 per ton on all smaller lots. He forwards a statement of these charges to the State Treasurer and hands a copy of this statement to the purchaser, so that the purchaser may deduct this amount from his payment for the ore and forward a check for the sum to the State Treasurer. The blank used for this purpose is Form 2, attached.

Upon receipt of the pulp at the State Mining Laboratory, it is carefully assayed and a report filled out on Form 3. Should any question arise, this pulp is again assayed without further cost to the shipper. If there is still any doubt as to the correctness of the assay, an assay is run upon the moisture sample. This assay will not give exactly the same result as the pulp, but it will be so near it that if pulps have been accidentally transposed the moisture sample will serve to detect the fact.

As soon as the State Assayer receives the assayer's report, he makes out his report to the shipper on Form 4 and forwards it at once. This concludes the department's work, since it has no regulatory powers over ore buyers nor any power to adjust terms. If the results obtained by the State Assayer are higher than those found by the purchaser, recourse may be had to an umpire assay in the usual manner.

In case of special request, the State Assayer wires the results of his assays to shippers, checks settlement sheets, furnishes lists of acceptable umpire assayers, and renders his clients such other services as the law permits.

Ore purchasers make monthly reports to the State Assayer on Form 5.

4. Work of the Department

During the period of 16 months from August 1, 1917, to December 1, 1918, the State Assayer and Inspector Department issued reports upon 189 lots of ore. These 189 shipments were made by 75 different operators, located in 28 districts, to three buyers, and aggregated 5,308 tons. The average monthly work of the Department was therefore 12 lots, aggregating 442 tons. Details as to localities, shippers, buyers, number of lots, weights, and characters of ore, will be found in Table I.

One lot was sampled at the Thompson sampler of the Mason Valley Mines Company, one at the Tonopah sampler of the West End Consolidated Mining Company, and 187 were sampled at the Hazen sampler of the Western Ore Purchasing Company. Six different inspectors were employed in the sampling of these shipments. Details concerning inspection are given in Table II.

The number of assays reported were 188 for gold, 188 for silver, 102 for copper, 52 for lead, 33 for zinc, 17 for insoluble residue, 13 for iron, 2 for alumina, 2 for silica, 2 for speiss, 1 for sulphur, and 1 for lime. All of these determinations were made in duplicate at least, and every high-grade gold or silver ore was assayed in quadruplicate. Details concerning these assays are shown in Table III. This by no means represents the full amount of work performed by the assayer, since in many cases the pulps were reassayed, and in a number of instances determinations were run upon moisture samples.

A summary of ore purchasers reports is given in Table V. These

reports have been used in advertising the department as explained in section 2.

5. Receipts and Disbursements

From July 12, 1917, to November 30, 1918, the following disbursements were made from the State Assayer and Inspector Appropriation of \$1,000:

Assay and analytical balances.....	\$431.00
Typewriter and stand.....	88.08
Stationery.....	50.12
Postage and express.....	50.73
Clerical assistance.....	119.15
Telephone and telegraph.....	36.86
Traveling expenses.....	52.22
Total disbursements.....	\$866.11

This leaves an unexpended balance of \$131.89 in the appropriation.

Fees paid by shippers were placed in the Assayer and Inspector Fund, from which all deputies wages and expenses were paid. The receipts to November 30, 1918, amounted to \$1,369.39. The disbursements were as follows:

Services of deputies.....	\$993.75
Expenses of deputies.....	221.67
State drier at Hazen.....	101.72
Total.....	\$1,317.14

This leaves an unexpended balance of \$52.25 in the fund.

6. Cause of Small Volume of Work

The State Assayer and Inspector has a mailing list of 761 operators who have been active since he has been in office, and it has been a disappointment to him that only 10 per cent of this number have patronized his department. It is true that a few of these are large shippers employing their own ore checkers, that some are shipping to samplers in their own immediate neighborhood where they can attend to shipments themselves, and that quite a number are prospecting and developing without making any shipments; yet it would seem that there must be a much larger number of these operators who might employ the State Assayer Department to their advantage.

Certain possible reasons for the small volume of business handled by the department suggested themselves. These were that the department was not conducted in such a manner as to give satisfaction to its clients, that the State Assayer Law failed to accomplish its object, and that the number of operating properties had greatly decreased recently owing to the disturbed condition of the mining industry. In order to ascertain public opinion upon this subject, which has so important a bearing upon the future of the department, a letter was sent to each of the seventy-five past patrons asking the following four questions:

1. Should the State Assayer Department be continued?
2. To what extent will its work increase with the return of peace?
3. What suggestions can you offer for improving the service of the department under the present law?
4. What changes in the law do you think desirable?

A digest of the replies to this questionnaire will be found in Table IV. The answers indicated that the department was giving rather general satisfaction, since only three out of forty-six who answered were in favor

of discontinuing it. The only criticism of the department brought forward was that it was not sufficiently advertised. This matter will most certainly be corrected should the department be continued. All sorts of opinions were presented as to whether the work of the department would increase with the return of peace or not. Twenty-one thought the law should be changed, while thirteen favored it as it stood.

As has already been stated, the aim of the State Assayer Law is to provide a means whereby anyone in Nevada may obtain reliable ore-checking and assaying service at a reasonable cost. The State Assayer and Inspector feels that the law fails to attain its object. The Western Ore Purchasing Company is practically the only Nevada purchaser which buys ores shipped from a distance, and during the past year the State Assayer has supervised sampling for 61 of its 194 customers, which is a very reasonable proportion. But during this same period a great number of shipments were made from Nevada to California and Utah smelters which the State Assayer could not supervise under the law, although frequently requested to do so. Thus those Nevada shippers who ship the longest distances, and who are, therefore, most greatly in need of the services of the State Assayer, are unable to secure them.

The law seems unfair in one other respect. The charges to be assessed upon lots of less than 50 tons may be placed at cost by the State Assayer, but lots of over 50 tons must be assessed at the rate of 25 cents per ton. This is unreasonably high in the majority of cases, and has led shippers to discontinue shipping in care of the State Assayer.

The State Assayer and Inspector feels that the main reason why his department is not better patronized is owing to the shortcomings of the present law. He feels that if the law were changed and more thoroughly advertised his business would increase several fold.

9. Recommendations

The State Assayer and Inspector recommends that his department be continued providing the State Assayer Law is suitably modified. He questions whether the department is of sufficient value to the State under the present law to be retained, although undoubtedly of considerable benefit to a small number of shippers.

The changes in the law recommended are as follows:

1. To permit deputies or agents of the State Assayer and Inspector to operate outside the State of Nevada at points where Nevada ores are purchased.

2. To permit the State Assayer and Inspector to fix his charges on lots exceeding 50 tons in weight, providing that these charges shall at least cover costs of sampling and providing they shall be the same to all shippers of the same character of ore to the same place.

It is recommended that an appropriation of \$1,000 be made to carry on the work of the department, and that in view of the present small volume of its work the salary be reduced from \$3,000 per year to \$2,400.

Respectfully submitted,

FRANCIS CHURCH LINCOLN,

December 20, 1918.

State Assayer and Inspector.

TABLE 1—PATRONS OF THE STATE ASSAYER DEPARTMENT
From August 1, 1917, to November 30, 1918

Locality	Patron	Purchaser	Lots	Pounds	Character
Austin	Thacher, W. M.	Western Ore Purchasing Company	1	23,060	Silver
Battle Mountain	Copper Canyon Mining Company	Western Ore Purchasing Company	3	216,660	Copper
	Kimbberly Consolidated Mines Company	Western Ore Purchasing Company	3	245,640	Copper, silver, gold
	Lemallen, H. H.	Western Ore Purchasing Company	8	669,140	Copper
	Mendive, F. S.	United States Smelting and Refining Company	9	752,060	Copper
	Reedle, F. C.	Western Ore Purchasing Company	2	122,960	Silver
Canadalaria	Myers, A. G.	Western Ore Purchasing Company	1	47,100	Copper, gold
Canyon City	Juniper Extension Mining Company	Western Ore Purchasing Company	2	133,360	Copper
Goldfield	Connelly, T. M.	Western Ore Purchasing Company	1	7,586	Lead, silver
Haworthine	Hanlen, M. C.	Western Ore Purchasing Company	1	3,121	Lead, silver
	New York Mine	Western Ore Purchasing Company	1	2,342	Lead, silver
	Brady, S. H., & Co.	Western Ore Purchasing Company	1	581,300	Silver, gold
Honolulu	Nason, W. E.	West End Consolidated Mining Company	8	48,060	Gold
	Nagle & McNeil	Western Ore Purchasing Company	1	36,160	Lead, silver
Humboldt	Moffitt, J. H.	Western Ore Purchasing Company	1	30,620	Lead, silver
Kearns, Cal.	McNamara, H.	Western Ore Purchasing Company	2	53,540	Silver
Kendall	Abrams, H., and Tropicula Copper Company	Western Ore Purchasing Company	2	143,040	Copper
Landing	Buchman, A. C.	Western Ore Purchasing Company	2	76,480	Copper
	Buchman & Guagnell	Western Ore Purchasing Company	1	90,240	Copper
	Bullinger, W. M.	Western Ore Purchasing Company	1	24,960	Copper
	Cassidy & Wilson	Western Ore Purchasing Company	1	50,660	Copper
	Compton, C. M.	Western Ore Purchasing Company	1	36,960	Copper
	Emerald Copper Company	Western Ore Purchasing Company	3	118,620	Copper
	Gusquell, J.	Western Ore Purchasing Company	1	94,240	Copper
	Hardling & Fulton	Western Ore Purchasing Company	1	1,670	Copper
	Jordan, G. W.	Western Ore Purchasing Company	3	138,720	Copper
Jordan, Ind.	Tropicula Company	Western Ore Purchasing Company	3	86,200	Copper
Kiechan Mines Corporation	Western Ore Purchasing Company	2	544,400	Copper	
Lab & Warren	Western Ore Purchasing Company	2	163,340	Copper	
Landing Merrillville Company	Western Ore Purchasing Company	4	68,208	Copper	
	Moore, J. J.	Western Ore Purchasing Company	2	142,000	Copper
	O'Connell, J.	Western Ore Purchasing Company	2	90,340	Copper
	Peterson, H. A.	Western Ore Purchasing Company	2	52,040	Copper
	Field Brothers	Western Ore Purchasing Company	1	86,060	Copper
	Field, R. W.	Western Ore Purchasing Company	1	52,340	Gold, silver
	Flot Copper Company	Western Ore Purchasing Company	2	196,080	Copper
	Hemmer, F. A.	Western Ore Purchasing Company	1	84,360	Copper
	Jones, Sheridan	Western Ore Purchasing Company	2	136,260	Copper
	Warner, H. H.	Western Ore Purchasing Company	2	225,360	Copper
	Watson, G. R.	Western Ore Purchasing Company	3	17,918	Copper
	Watson, E. G.	Western Ore Purchasing Company	2	63,240	Silver, lead
	Lally, J. R.	Western Ore Purchasing Company	1	5,000	Copper
	McConnell Mines Company	Western Ore Purchasing Company	1	702,000	Silver
	Evans, L. K.	Western Ore Purchasing Company	1	5,102	Silver
Levensh					
Maun					
Hill City					

Mina	Brower & Baker	Western Ore Purchasing Company	77,280	Copper
	Ferette, G.	Western Ore Purchasing Company	90,480	Copper
	Merrill, A. C.	Western Ore Purchasing Company	50,420	Copper
	Mina Mercantile Company	Western Ore Purchasing Company	32,440	Silver, copper
	Silver Dyke Mines Company	Western Ore Purchasing Company	31,945	Gold, copper, silver
	Simon, P. A.	Western Ore Purchasing Company	262,900	Lead, silver
	Thompson & Baker	Western Ore Purchasing Company	415,780	Silver, copper
	Sisson, A. F.	Western Ore Purchasing Company	4,257	Silver, gold
	Goodin & Humphrey	Western Ore Purchasing Company	7,120	Copper, silver
	Grijevica M., & Yalovica, M.	Western Ore Purchasing Company	51,941	Silver
	Lappat, E.	Western Ore Purchasing Company	56,580	Copper
	Nevada Rand Mines Company	Western Ore Purchasing Company	54,040	Silver, gold
	Rollins & Williams	Western Ore Purchasing Company	12,925	Silver, gold
	Flynn, T. J.	Western Ore Purchasing Company	12,132	Gold, silver
	Rosenberg, A. J.	Western Ore Purchasing Company	576	Silver, gold
	Salmon & Ross	Western Ore Purchasing Company	172,762	Gold, silver
	Schaff, F. C.	Western Ore Purchasing Company	970	Silver, gold
	Uvada Mining Company	Western Ore Purchasing Company	30,380	Copper
	Berg Brothers	Western Ore Purchasing Company	2,266	Silver
	Nevada Progress Gold Mining Company	Western Ore Purchasing Company	299,560	Silver, gold
	Hall & Schroeder	Western Ore Purchasing Company	27,760	Silver
	Sunflower Mining Company	Western Ore Purchasing Company	18,100	Lead, copper
	Wittenberg Transfer Company	Western Ore Purchasing Company	11,794	Silver, lead
	Louisiana Consolidated Mining Company	Western Ore Purchasing Company	300,370	Silver, lead
	Case, L. E.	Western Ore Purchasing Company	37,540	Silver
	Crittenden & Ferris	Western Ore Purchasing Company	7,024	Silver, gold
	First National Bank for E. S. Mendive	Western Ore Purchasing Company	93,200	Copper, silver
	McGarrah, L. F.	Western Ore Purchasing Company	3,968	Silver, lead
	McKay & Matt	Western Ore Purchasing Company	58,280	Copper
	Brady, S. H., & Co.	Western Ore Purchasing Company	640,260	Copper
	Brady, S. H., & Co.	Mason Valley Mines Company	162,880	Copper
	Rosson & Bergman	Western Ore Purchasing Company	13,962	Lead, silver
	Linville, R.	Western Ore Purchasing Company	13,735	Silver, copper
		3 purchasers	189	
			10,616,423	
		75 shippers		
Olinghouse				
Plumas Junction				
Queen				
Rand				
Rawhide				
Reno				
Round Mountain				
Sweetwater				
Tonopah				
Tybo				
Winnemucca				
Yerington				
Wonder				

TABLE II—SUPERVISION OF SAMPLING

Inspector	Lots	Purchaser
F. C. Lincoln	9	1 Mason Valley Mines Company.
H. E. Higgins	5	8 Western Ore Purchasing Company.
R. I. Green	70	Western Ore Purchasing Company.
F. T. Abbey	3	Western Ore Purchasing Company.
D. H. Allen	101	Western Ore Purchasing Company.
Spark and Robb	1	West End Consolidated Mining Company.
Total	189	1 Mason Valley Mines Company.
		1 West End Consolidated Mining Company.
		187 Western Ore Purchasing Company.

TABLE III—LIST OF ASSAYS

Lot	Smelter lot	Gold, ounces	Silver, ounces	Copper, per cent	Lead, per cent	Zinc, per cent	Ins., per cent	Iron, per cent	Other substances, per cent
1	7397	0.01	1.95	4.64					
2	7399			9.37					
3	7423	Trace	2.08	8.32			50.21	15.16	
4	7424	Trace	2.26	6.40			61.3	11.42	
5	7439	0.04	3.40	17.60					
6	7440	0.02	1.66	10.38					
7	7462	0.015	26.40	12.64					
8	7477	0.01	8.02	8.14					
9	7478	Trace	1.14	2.91					
10	7483	0.465	3.28	2.52					
11	7502	Trace	2.80	9.58					
12	7517	0.045	0.965	9.90					
13	7523	Trace	1.94	6.28					
14	7524	Trace	2.62	7.17					
15	7537	0.60	31.84		31.76				
16	7358	0.065	22.665						
17	7539	Trace	2.24	8.23					
18	7540	Trace	0.21	1.72					
19	7547	Trace	0.20	2.11					
20	7551	Trace	0.14	2.37					
21	7552	Trace	0.16	2.14					
22	7553	0.02	11.94		43.57	1.24	0.28	3.08	Speiss 2.2
23	7554	Trace	0.12	2.59			71.82	6.98	
24	7555	Trace	0.17	2.81			72.96	7.18	
25	7571	0.12	29.48		13.10	6.80			
26	7572	0.06	29.10		17.40	6.40			
27	7574	0.02	18.92	11.11					
28	7573	0.06	26.48		25.30				
29	7578	0.15	56.06		23.74				
30	7579	0.08	0.29	7.95					
31	7580	0.01	1.49	10.14					
32	7581	3.58	6.72	23.14					
33	7592	0.085	16.245						
34	7593	0.34	27.16						
35	7594	0.01	4.89	14.24					
36	7611	0.01	1.33	6.64					
37	7612	0.045	1.955	26.99					
38	7613	Trace	0.46	6.70			76.74		
39	7615	Trace	0.34	5.49					
40	7616	Trace	2.27	4.14					
41	7617	Trace	5.80	1.06					
42	7618	Trace	1.59	9.54					
43	7619	Trace	3.52	8.34					
44	7634	0.15	62.51		31.7	10.9			
45	7642	0.08	19.08	0.86	15.1				
46	7650	0.015	13.085	10.15					
47	7658	Trace	0.54	9.08			70.9		Sulphur 3.72 Alumina 7.15 Silica 58.48
48	7665	0.32	244.74						
49	7666	0.32	30.62		42.5				
50	7668	Trace	0.43	7.37			73.4	9.9	Silica 52.80 Alumina 06.00
51	7675	0.02	0.86	9.25					
52	7676	0.155	17.865		8.51	8.8			
53	7684	0.02	0.32	5.08					
54	7688	.06	.80	10.38					
55	7693	0.18	30.3		17.0	9.1			
56	7703	0.04	1.56	7.66					
57	7717	.01	2.76	11.86					
58	7725	.01	2.07	7.43					
59	7733	0.22	38.90		24.35	8.4			
60	7737	0.01	1.51	4.16					
61	7740	Trace	0.16	3.23					
62	7750	0.01	19.37	9.86					

TABLE III—Continued

Lot	Smelter lot	Gold, ounces	Silver, ounces	Copper, per cent	Lead, per cent	Zinc, per cent	Ins., per cent	Iron, per cent	Other substances, per cent
63	7751	Trace	0.10	3.37					
64	7752	0.19	26.81		16.48	7.20			
65	7769	Trace	0.20	3.64					
66	7772	Trace	0.15	3.98					
67	7774	0.01	0.52	12.87					
68	7775	0.01	0.29	5.60					
69	7776	0.01	1.49	5.36					
70	7787	0.195	23.435		14.18	8.28			
71	7795	0.01	2.40	6.83					
72	7801	0.68	190.78						
73	7798	0.07	35.29		2.71				
74	7802	None	1.61	14.03					
75	7805	2.34	66.61						
76	7806	0.295	24.455		12.96	9.72			
77	7807	0.03	8.10	3.53	14.30				
78	7800	0.60	46.00		2.94				
79	7815	0.05	45.20	1.95	19.60				
80	7816	None	1.21	6.36					
81	7819	None	0.10	6.89					
82	7823	0.03	2.63	9.96					
83	7834	None	Trace	6.89					
84	7837	0.095	20.845		3.44				
85	7844	0.26	36.00		18.60	10.20			
86	7849	0.01	12.91	8.45					
87	7853	None	0.70	6.65					
88	7858	0.01	20.58		38.10	11.90			
89	7870	Trace	0.71	7.31					
90	7879	0.18	25.06		13.00	10.03			
91	7881	Trace	Trace	5.99					
92	7893	None	Trace	6.15					
93	7894	0.12	28.48		15.10	10.40			
94	7904	0.08	13.61						
95	7905	0.28	42.84						
96	7908	0.16	23.20	12.46	10.75				
97	7910	0.01	17.88		31.23	12.80			
98	7911	None	Trace	5.78					
99	7921	0.08	26.66		18.47	10.34			
100	Brady No. 1	0.005	0.10	1.97					
101	7925	None	Trace	6.36					
102	7928	0.19	226.89						
103	7944	None	0.30	4.48					
104	7946	0.01	19.91		41.00	8.50	19.28		Lime 5.52 Speiss 2.61
106	7971	0.01	12.80	8.44			35.78	13.96	
106	7977	0.025	12.22		12.36		18.48	27.53	
107	7978	0.32	21.00	21.40			55.12	6.17	
108	7995	0.07	61.43						
109	8011	Trace	0.42	8.66			31.76	29.35	
110	8018	Trace	1.26	8.85					
T-1	2190	1.10	1.91						
111	8025	Trace	0.72	13.37					
112	8026	0.22	120.61	0.49			56.70	11.74	
113	8027	Trace	1.12	4.69					
114	8030	45.95	117.69						
115	8031	0.14	31.53		19.90	13.20			
116	8032	0.36	39.20		29.70	5.12			
117	8033	Trace	1.84	7.44			42.00		
118	8041	0.57	102.98		2.30		72.44	12.65	
119	8046	0.27	46.62		37.60	4.08			
120	8048	0.16	37.09		23.10	13.20			
121	8049	Trace	2.33	7.55					
122	8051	Trace	1.68	8.50			50.60	13.16	
123	8056	Trace	1.86	6.70					
124	8057	0.23	36.52		21.55	12.10			
125	8060	0.27	38.88		29.13	5.12			
126	8074	0.21	33.64		18.52	11.76			
127	8077	0.24	40.33		30.40	5.53			
128	8082	0.28	35.96		29.30	6.70			
129	8088	0.20	29.21		18.52	12.20			
130	8089	0.19	192.51						
131	8097	0.26	8.92	4.43	Trace				
132	8098	0.39	8.06	4.59					
133	8100	0.19	504.51						
134	8104	18.10	120.75						
135	8108	0.30	155.18						
136	8110	0.24	27.58		18.00	12.13			
137	8117	0.295	32.63		25.70	6.80			
138	8120	5.78	144.02						
139	8122	0.01	1.97	3.83					
140	8126	0.295	8.395	4.78					

TABLE III—Continued

Lot	Smelter lot	Gold, ounces	Silver, ounces	Copper, per cent	Lead, per cent	Zinc, per cent	Ins., per cent	Iron, per cent	Other substances, per cent
141	8150	0.395	149.845						
142	8165	0.24	35.90		29.32	6.50			
143	8173	0.345	29.845		19.69	12.23			
144	8174	0.16	158.23						
145	8186	0.25	35.95		29.90	7.20			
146	8188	4.79	182.32						
147	8189	0.53	1,768.57						
148	8190	1.06	1,207.13						
149	8191	0.22	47.70		32.40	13.90			
150	8194	0.81	117.99						
151	8196	12.50	74.31						
152	8193	0.34	6.37						
153	8216	0.04	21.42		16.40				
154	8218	0.10	9.18	8.11					
155	8219	0.07	16.14	0.93	9.40				
156	8221	0.01	1.87	3.23					
157	8226	0.25	1.53	14.34					
158	8234	0.18	82.21						
159	8236	0.255	123.69						
160	8258	Trace	40.60		4.74				
161	8265	0.05	2.51	2.84					
162	8270	0.23	106.94						
163	8273		2.38	6.57					
164	8274	32.45	108.92						
165	8275	6.19	1,252.38						
166	8277	0.23	83.90	3.72	13.99				
167	8289	0.09	1.59	2.44					
168	8296	0.04	4.22	7.28					
169	8300	4.39	137.44						
170	8302	0.45	1,238.85						
171	8304	0.01	58.10						
172	8305	1.05	1,126.11						
173	8324	.21	88.54						
174	8327	0.07	1.05	3.59					
175	8343	0.08	0.91	4.06					
176	8347	0.36	189.04						
177	8362	0.096	0.81	3.70					
178	8379	0.22	223.38						
179	8380	0.58	1,647.00						
180	8385	0.11	0.60	2.95					
181	8398	0.055	1.55	2.47					
182	8408	7.22	127.81						
183	8418	Trace	3.79	3.47					
184	8431	0.28	238.60						
185	8440	0.20	98.59						
186	8444	2.11	71.07						
187	8542	0.31	100.93	4.88	14.15				
188	8453	12.04	243.70						

189 Lots—188 for gold, 188 silver; 102 copper; 52 lead; 33 zinc; 17 Ins.; 13 iron; 8 miscellaneous. 601 determinations.

**TABLE IV—DIGEST OF REPLIES TO QUESTIONNAIRE REGARDING
FUTURE OF DEPARTMENT**

Questionnaires mailed to patrons.....	75
Answered.....	46
Returned, address unknown.....	4
Unanswered.....	25
	<hr/> 75
1. Should the State Assayer Department be continued?	
Yes.....	35
Question not answered in reply.....	5
Not unless law is changed.....	3
No.....	3
	<hr/> 46
2. To what extent will its work increase with return of peace?	
Great increase.....	9
Increase.....	8
Slight increase.....	2
Increase if law is improved.....	3
Doubtful.....	9
No increase.....	5
Probable decrease.....	2
Question not answered in reply.....	8
	<hr/> 46
3. What suggestions can you offer for improving the service rendered by the department under the present law?	
None.....	21
More advertising.....	7
Question not answered in reply.....	18
	<hr/> 46
4. What changes in the law do you think desirable?	
None.....	13
Question not answered in reply.....	12
Reply suggests one or more of following changes.....	21
	<hr/> 46

Suggested Changes in Law

1. State Assayer to fix charges.....	5
2. Service for Nevada shippers in other States.....	2
3. State Assayer to secure rates and advise shippers.....	2
4. Field man to assist small shippers by advice.....	2
5. List of properties for sale to be kept on hand.....	1
6. Larger appropriation for department.....	3
7. Illegal for purchaser to charge higher freight than paid.....	2
8. All shipments to be in care State Assayer unless specific orders to contrary given.....	2
9. Payments to be based upon department results.....	4
10. State sampler.....	6
11. State motor-truck haulage of ore.....	1

**TABLE V—STATEMENT OF CUSTOM ORES PURCHASED IN NEVADA
JULY, 1917, TO NOVEMBER, 1918, INCLUSIVE**

Compiled From Reports to the State Assayer and Inspector

1. ELKO PRINCE LEASING COMPANY, MIDAS

	<i>Customers</i>	<i>Tons</i>
July, 1917.....	1	4.8
August, 1917.....	2	152.5
September, 1917.....	3	79.1
October, 1917.....	2	61.0
November, 1917.....	2	37.0
	<hr/>	
Total for five months.....	7*	334.4
Monthly average for five months.....	2	70.0
	<hr/>	
December, 1917.....	2	274.0
January, 1918.....	1	5.0
February, 1918.....	0	0
March, 1918.....	0	0
April, 1918.....	0	0
May, 1918.....	0	0
June, 1918.....	0	0
July, 1918.....	0	0
August, 1918.....	0	0
September, 1918.....	0	0
October, 1918.....	1	15.0
November, 1918.....	1	52.5
	<hr/>	
Total for twelve months.....	4*	348.5
Monthly average for twelve months.....		29.0

*Excluding duplications.

REPORT OF STATE ASSAYER AND INSPECTOR

2. GOLDFIELD CONSOLIDATED MINES COMPANY

July, 1917.....	0	0
August, 1917.....	0	0
September, 1917.....	0	0
October, 1917.....	0	0
November, 1917.....	0	0
December, 1917.....	0	0
January, 1918.....	0	0
February, 1918.....	0	0
March, 1918.....	1	3.5
April, 1918.....	0	0
May, 1918.....	0	0
June, 1918.....	0	0
July, 1918.....	1	56.7
August, 1918.....	0	0
September, 1918.....	0	0
October, 1918.....	2	232.0
November.....	2	447.3
Total for twelve months.....	2*	799.5
Monthly average for twelve months.....		67.0

3. MASON VALLEY MINES COMPANY

		<i>Pounds</i>
July, 1917.....	5	34,562,510
August, 1917.....	8	39,336,129
September, 1917.....	9	40,968,940
October, 1917.....	10	37,371,720
November, 1917.....	7	39,278,040
Total for five months.....	15*	191,907,339
Monthly average for five months.....	8	38,381,568
		<i>Tons</i>
December, 1917.....	6	19,175
January, 1918.....	5	27,637
February, 1918.....	8	2,797
March, 1918.....	9	2,643
April, 1918.....	9	30,969
May, 1918.....	8	15,472
June, 1918.....	7	14,574
July, 1918.....	12	14,323
August, 1918.....	9	17,478
September, 1918.....	8	14,969
October, 1918.....	6	14,779
November, 1918.....	8	14,069
Total for twelve months.....	25*	179,675
Monthly average for twelve months.....	8	14,973

4. NEVADA CONSOLIDATED COPPER COMPANY

July, 1917.....	1	9,225
August, 1917.....	1	36,986
September, 1917.....	1	34,722
October, 1917.....	1	30,610
November, 1917.....	1	32,419
Total for five months.....	1*	143,972
Monthly average for five months.....	1	28,794
December, 1917.....	1	23,684
January, 1918.....	1	26,136
February, 1918.....	1	32,058
March, 1918.....	1	30,898
April, 1918.....	1	28,670
May, 1918.....	1	38,612
June, 1918.....	1	19,065
July, 1918.....	1	24,097
August, 1918.....	1	22,463
September, 1918.....	1	14,671
October, 1918.....	1	13,706
November, 1918.....	1	6,488
Total for twelve months.....	1*	289,747
Monthly average for twelve months.....	1	2,248

*Excluding duplications.

5. THE SILVERMINES CORPORATION

July, 1917	0	0
August, 1917	0	0
September, 1917	0	0
October, 1917	0	0
November, 1917	0	0
December, 1917	0	0
January, 1918	1	159
February, 1918	2	745
March, 1918	3	987
April, 1918	2	1,583
May, 1918	5	1,523
June, 1918	6	150
July, 1918	7	217
August, 1918	4	339
September, 1918	6	268
October, 1918	0	0
November, 1918	0	0
Total for twelve months	18*	4,448
Monthly average for twelve months	2	37

6. TONOPAH-BELMONT DEVELOPMENT COMPANY

July, 1917	0	0
August, 1917	0	0
September, 1917	0	0
October, 1917	0	0
November, 1917	0	0
December, 1917	0	0
January, 1918	0	0
February, 1918	0	0
March, 1918	0	0
April, 1918	0	0
May, 1918	0	0
June, 1918	0	0
July, 1918	3	6,284
August, 1918	2	6,007
September, 1918	3	5,627
October, 1918	3	5,803
November, 1918	2	4,963
Total for twelve months	4*	28,704
Monthly average for twelve months		239

7. UNION CONSOLIDATED MINING COMPANY

July, 1917	0	0
August, 1917	0	0
September, 1917	0	0
October, 1917	2	603.352
November, 1917	0	0
December, 1917	0	0
January, 1918	1	299.792
February, 1918	1	111.639
March, 1918	1	557.381
April, 1918	4	381.853
May, 1918	3	500.896
June, 1918	4	1,913.225
July, 1918	4	2,375.403
August, 1918	5	2,276.564
September, 1918	5	2,081.394
October, 1918	3	1,943.164
November, 1918	4	2,205.921
Total for twelve months	6*	14,647.232
Monthly average for twelve months	3	1,221

*Excluding duplications.

REPORT OF STATE ASSAYER AND INSPECTOR

8. WEST END CONSOLIDATED MINING COMPANY

July, 1917.....	4	1,288
August, 1917.....	9	1,282
September, 1917.....	7	1,442
October, 1917.....	6	1,566
November, 1917.....	7	665
Total for five months.....	14*	6,203
Monthly average for five months.....	3	124
December, 1917.....	12	1,058
January, 1918.....	8	1,075
February, 1918.....	2	526
March, 1918.....	5	1,377
April, 1918.....	4	980
May, 1918.....	9	1,150
June, 1918.....	9	1,526
July, 1918.....	7	1,285
August, 1918.....	8	1,460
September, 1918.....	8	1,419
October, 1918.....	6	1,703
November, 1918.....	11	1,472
Total for twelve months.....	29*	15,031
Monthly average for twelve months.....	2	1,252

9. THE WESTERN ORE PURCHASING COMPANY

		<i>Pounds</i>
July, 1917.....	44	9,209,896
August, 1917.....	44	7,279,484
September, 1917.....	56	6,753,614
October, 1917.....	49	8,796,584
November, 1917.....	51	6,322,622
Total for five months.....	155*	38,362,000
Monthly average for five months.....	31	7,672,000
December, 1917.....	41	1,695,459
January, 1918.....	42	7,770,277
February, 1918.....	37	8,307,601
March, 1918.....	31	7,112,365
April, 1918.....	36	5,467,946
May, 1918.....	34	3,778,453
June, 1918.....	26	4,064,450
July, 1918.....	17	1,103,974
August, 1918.....	30	8,356,378
September, 1918.....	31	5,063,665
October, 1918.....	20	3,063,598
November, 1918.....	22	2,698,049
Total for twelve months.....	194*	58,522,216
Monthly average for twelve months.....	18	187,685

*Excluding duplications.

FORMS USED BY STATE ASSAYER AND INSPECTOR**FORM 1****STATE ASSAYER AND INSPECTOR FOR THE STATE OF NEVADA****DEPUTY'S REPORT.**Western Ore Purchasing Company's
Hazen Sampler.

State Lot No. Sampler Lot No. Date 191....
 Shipper
 Shipping Point Address
 Incoming Car 191.... Initials No. Condition

Sampling—

Began unloading M. 191....
 Began sampling M.
 Car emptied M.
 Receiving bin emptied M.
 Conveyor boot cleaned M.
 Sampling stopped M.
 Elevators cleaned M.
 Shipping bin emptied M.
 Sample prepared M.
 Shut down.... minutes for....

Improper sampling occurred as follows

Outgoing Car 191.... Initials No. Condition
 Weight loaded lbs.
 Weight empty lbs.
 Gross weight of ore lbs.

Charges, \$ Based upon
 Moisture—
 Inspector's result %
 Time hours
 Correction
 Temperature °C.

Remarks
 Signed Deputy State Assayer and Inspector.

FORM 2**INSPECTOR'S STATEMENT OF STATE ASSAYER AND INSPECTOR'S CHARGES**

(State Treasurer's Copy)

Number Date

I have today inspected the sampling of the ore

Shipped by Address
 From the Mine, District
 To the Sampler, Sampler's Lot No. and hereby certify that the State Assayer
 and Inspector's charges on this shipment, which are to be deducted by the Sampler and paid to the
 State Treasurer for deposit in the Assayer and Inspector Fund, amount to the sum of \$.....

(Signed), Inspector.

FORM 3**ASSAYERS' REPORT TO THE STATE ASSAYER AND INSPECTOR FOR THE
STATE OF NEVADA**

STATE MINING LABORATORY, RENO, NEVADA

Number Date

I have today assayed ore sample No. submitted to me on and certify
 its contents to be as follows:

Valuable Metals	Gangues	Moisture
Oza. Gold	% Insoluble	% Moisture
Oza. Silver	% Lime	
% Copper	% Iron	
% Lead (Fire Assay)	% Sulphur	
% Zinc	% Speiss	
%	%	
%	%	

(Signed), Assayer.

FORM 4**REPORT OF THE STATE ASSAYER AND INSPECTOR FOR THE STATE OF NEVADA**

STATE MINING LABORATORY, RENO, NEVADA

Number Date
 Ore shipped by Address
 From the Mine District
 To the Sampler, Sampler's Lot No.

Sampling
 Sampling inspected by on

From	CARS	Into	WEIGHTS IN POUNDS			
Initials	Numbers	Initials	Numbers	Gross	Car	Net
Remarks						

Assays
 Assays made by on

VALUABLE METALS	GANGUES	MOISTURE
Ozs. Gold	% Insoluble	% Moisture
Ozs. Silver	% Lime	
% Copper	% Iron	
% Lead (Fire Assay)	% Sulphur	
% Zinc	% Speiss	
%	%	
%	%	

Charges
 Based upon tons at 25 cents per ton, \$..... or upon Deputy hire for days at \$..... per day,
 and Traveling Expenses, \$.....
 Total Charges Deducted by Sampler, \$.....
 (Signed), State Assayer and Inspector.

FORM 5

(Governor's copy)

ORE PURCHASER'S MONTHLY REPORT TO THE STATE ASSAYER AND INSPECTOR FOR THE STATE OF NEVADA

Company Address
 Report No. Date
 During the month of, this company received at its the
 following shipments of custom ores:

SHIPPER	ADDRESS	SHIPPING POINT	TONNAGE	CHARACTER
.....

Signed:



STATE OF NEVADA

SIXTH BIENNIAL REPORT

OF THE

NEVADA HISTORICAL SOCIETY

1917=1918



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : JOE FARNSWORTH, SUPERINTENDENT

1919



LETTER OF TRANSMITTAL

RENO, NEVADA, January, 1919.

To His Excellency, EMMET D. BOYLE, Governor of the State of Nevada.

SIR: In accordance with the provisions of law, I herewith submit a report of the work of the Nevada Historical Society for the two biennial terms ending December 31, 1918.

Very respectfully yours,

JEANNE ELIZABETH WIER,
Secretary.

REPORT OF THE SECRETARY

OFFICE OF THE NEVADA HISTORICAL SOCIETY,
RENO, NEVADA, January 1, 1919.

HON. EMMET D. BOYLE, *Governor of Nevada*.

DEAR SIR: The Secretary of the Nevada Historical Society, in compliance with law, submits this report of the transactions and work of the organization.

I. OBJECTS OF THE SOCIETY

The objects of this Society are threefold: first and most important, to bring to one centrally located place and there to preserve information relating to the antecedents of every phase of development in Nevada; second, to aid in the promotion of studies which will use this information to facilitate the further development of the State; third, to extend the knowledge of the resources and advantages of Nevada to citizens of other States and to diffuse within this Commonwealth a knowledge of those factors which are related to the future material and moral progress of the State. In other words, its work is preservative, digestive, and distributive. Its methods of action are through library, museum, publications, affiliated organizations (as the Pioneer Society), and gratuitous service in consultation and advice.

II. ACTIVITIES OF THE SOCIETY, 1917-1918

1. WAR WORK. For us, as for all educational institutions, the war has been the dominant feature of the biennium. It has modified all our activities and we in turn have sought to be helpful in achieving the great world purpose. The membership of the Nevada Historical Society is naturally composed largely of men who are above the age limit of the draft and even of volunteer service. However, several were actually in the foreign service of the Nation or of the Allies. Mr. J. F. Kent not only volunteered for himself, but took his Nevada-made fortune with him for the payment of his expenses. Mr. Edwin F. Faber, to whose wonderful deftness with tools is due much of our home-made equipment, enlisted from Canada before the United States entered the war and saw several years of service before he met his death in action in France last summer. Six months prior to that time he sent to the museum a German helmet, cap, and a number of military buttons, with the message that if he ever returned he would properly record their history. Instead, they have helped to make imperishable his record as a soldier. Still other members of the Society were on the eve of leaving for France when the armistice was signed. Hon. Frank Williams had been accepted for Red Cross work of a difficult nature. At this time it is impossible to speak of all who engaged in foreign service or of those scores who were active at home in Councils of Defense, Red Cross and Food Administration, sales, campaigns and those other multitudinous activities in America connected with the war. Practically every member has contributed in some way.

But, after all, the chief war function of an institution like ours is to preserve a faithful account of the war with particular reference to the

activities of our own Commonwealth. The Nevada Historical Society has gathered as it has had opportunity such federal and local materials as bear in any way upon the conflict. The Secretary last summer did personal work in several southern counties and started the work of collection there. But realizing that a systematic and widespread effort will be necessary in order to gain satisfactory results, the Secretary, with the advice and consent of the Executive Council, has drawn up a plan for finetooth-combing the State to obtain all the data pertaining to Nevada's part in the war. She has also compiled a pamphlet of directions for the numerous workers who are to be enlisted for the task. The printing of the pamphlet and the inauguration of the real work is now waiting the result of legislative action in providing means necessary to put the plan into operation. The scheme provides for a Nevada War History Committee, county committees in the respective divisions of the State, and such local committees and historians as numbers and distribution of population in the various districts may necessitate. The Governor, Adjutant-General, and the Chairman of the State Council of Defense will be ex officio members of the State Committee. The data gathered will be not only that pertaining to military and official service, but will include that great host of activities which has contributed in this country toward the winning of the war. A complete list of all persons in the service is the first requisite, and this, for those who were not called in the draft, will necessarily often be obtainable only from private sources and by means of local personal effort. So, also, will the accurate sketch of each man be thus obtained as well as photographs. Especial attention is given to the matter of pictures for all the various activities. Some day a photographic history of Nevada's war activities should be published. The material must be gathered now. The plan also calls for a very elaborate collection of newspaper files and clippings with proper indexing of the same. Such references will cover activities of Council of Defense, Red Cross, and all other local commissions and boards in public service for the war, destruction of property attributable to enemy activities, arrests of enemy aliens and suspects, mention of men in the service, letters from enlisted men or others in the war-zone or army camps, action of any school, church, or lodge that relates to war activities, industrial and labor conditions which have been affected by the war, expression of public opinion in patriotic celebrations, or action in suppression of disloyal meetings, and many other phases of work too numerous to mention. Exhaustive and accurate reports are to be gathered from all organizations, the newspapers, pictures, and broadsides being regarded as illustrative and supplemental only.

All this vast amount of data is to be gathered in scientific form and so arranged as to be of immediate service for reference purposes as well to serve the future historian in chronicling the story of the war. The pamphlet, which will be distributed widely throughout the State, shows the importance of doing this work here and now while the enthusiasm of the war is still with us and the data is available. Attention is also called to the need of Nevada doing its part toward the stupendous task of compiling the history for the United States as a whole.

2. WORK OF PUBLICATION. The Legislature of 1917 provided for the printing of biennial volumes of historical papers by the Nevada Historical Society, the entire edition of which is to be used by the Society for sale, exchange, and distribution among members. The first volume of papers

was issued in the spring of 1917. It includes a ninety-three page account of the Semicentennial Celebration of Nevada Statehood covering also the historical pageant, nine manuscripts of Nevada pioneers as found in the Bancroft Library of the University of California, monographs on various phases of state development, old-time poems, and three memorial articles. The seventy-seven illustrations are largely reproductions of pioneer pictures. The Legislature of 1917 also made an appropriation of \$100 for the printing of Dr. Romanzo Adams's *History of Taxation in Nevada*. The sum was inadequate and not until late in 1918 did the Society find a way to provide for the remainder. This volume, which will soon be ready for distribution, is the beginning of a new series entitled "Applied History Series." The Historical Society, through its library, is creating a workshop for students who may seek to organize and interpret the facts of history in the interest of present and future progress. The results of such study will be published from time to time in this new series, the "Historical Papers" being devoted to reminiscences and purely historical monographs. With the aid of history students at the University, progress has been made toward the writing of the history of county and township government in the State and the history of Reno. Students are now at work on military topics.

3. THE WORK OF COLLECTION. Owing to the war difficulties of travel and transportation, the Society has been seriously handicapped, at least so far as field work is concerned. The Secretary's annual pass from the Southern Pacific was, with all others of a similar character, recalled at the beginning of the war. Hence, financial considerations made it necessary to omit this important feature of the work. However, the increasing interest in the institution has brought to us many valuable items from volunteer collectors, so that the additions have been valuable both in quantity and quality. In this brief and hurriedly compiled report mention can be made of only a few typical contributions by way of illustration.

Anthropological Specimens from the Lovelock Indian Burial Cave. When excavation for guano began in this cave in 1910 the Indian relics found buried therein were being taken out in an unscientific way and scattered broadcast among curio seekers. The Secretary secured a considerable number of these things either from the excavators or those into whose hands they had come. But realizing that the excavation should be made by trained anthropologists and being unable to secure the money to obtain such assistance for Nevada supervision of the task, she asked the University of California to send an anthropologist to save the remainder of these priceless relics from destruction. The call was answered, and for some months Mr. L. L. Loud was busy with the task of excavating, packing, and shipping the cave relics. The Regents of the University of California consented to an arrangement whereby the Nevada Historical Society might secure one-third of the collection after it had been catalogued by the Anthropology Department. In the summer of 1918 the work of cataloguing was completed and Nevada's quota came into possession of the Society. It more than fills three large cases in the annex and contains over four thousand separate exhibits.

Mention has been made in a previous report of the loan collection of Miss Grace M. Lamb, who, as a teacher in Southern Nevada, has found opportunity to collect many valuable Indian relics. She has recently added to her exhibit a number of fine baskets and arrow heads.

Mayers-Bangs Collection. This varied and valuable exhibit of several hundred items which was donated in part in the previous biennium has been enlarged by frequent gifts during the last two years, one of them having arrived late in 1918. Eastern souvenirs of the Civil War period, as also those of Fort Halleck in our own section, lie side by side with reminders of the early days of Elko and the Elko Depot Hotel. A complete silver service, old walnut "whatnots," marble-topped tables and a sweet-toned music box which were known to all frequenters of the famous hostelry in the 70's now find a resting-place in the Mayers-Bangs corner, while from the balcony railing hangs the oil painting of A. W. Nightingill, first State Controller of Nevada.

From Elko also have come other contributions, among them that of the W. W. Booher collection in souvenirs of the Comstock and of presidential campaigns. The Comstock history is being recorded by means of data and relics from many sources. One of the most important additions is that made through the personal work of Mrs. Clayton Belknap, who spent one month among old acquaintances in Virginia City and achieved remarkable success in procuring relics of the early days.

W. C. Grimes Donation. Fallon pioneer life has recently been represented by the contribution of Mr. and Mrs. W. C. Grimes, who, when leaving their old-time home, gathered up and sent to the Society mementos of the early days in the shape of old-fashioned dishes, needlework, match-safe, and most precious of all, a ten-pound piece of copper dug from Nevada mines over sixty years ago and smelted by hand before the days of the smelter.

Valuable Paintings. Besides the Nightingill portrait, a number of valuable historical paintings have found their way to us during the last two years. A large painting of the Combination Mill at Belmont, 1864, is the gift of J. R. Harris through Captain Davis who, as voluntary collector, has brought scores of items to the museum. "Jim Butler and the Mule Discovering Tonopah" faces in one of the crowded corridors the oil painting of Reno in the 60's when the old Lake House and a cabin across the river were the sole habitations in this part of the Truckee Meadows. The large oil portrait of Mr. Lake, the founder of Reno, is also a loan from Mrs. Thompson, his daughter.

Hoskins Souvenirs. Mrs. R. J. Hoskins has contributed a large number of souvenirs of the stage in early Nevada, as well as miscellaneous pictures and a star from the flag of the battleship Maine. It is of interest to note that Mr. Hoskins's father-in-law built the first theater in Reno and also the first one in Sacramento.

Miscellaneous Gifts. A frying-pan hammered out from nails and other precious scraps of iron by the early Mormons is a loan from Mrs. Judge King of Carson City. One of the first telegraph instruments used in Nevada comes from Master Martin Fulton, the youngest member of the Society. Photographs of Adolph Sutro and wife, preserved in Dayton all these years by Mr. George Rammelkamp, recall the building of the famous tunnel. Souvenirs of the late prohibition campaign will in their time become historical.

Indefatigable Workers, such as Hon. E. T. Patrick, Hon. F. N. Fletcher, and Miss Annie Martin of Carson City, Captain Herman Davis, Mr.

Donald Fraser and Mrs. Charles Hymers of Reno, President Talbot and Mrs. Bangs of Elko, Miss Lamb of Death Valley, and many more too numerous to mention are constantly adding items both to museum and library, ranging in size from old stock certificates and campaign buttons up to life-size oil portraits.

Library Expansion. Through the aid of Secretary of State Brodigan, the Society now boasts nearly a complete set of state publications. These are invaluable for all research work in Nevada history. Captain Davis has loaned his large mining library to the Society. It includes magazines which are not now obtainable in the market. The United States Census Department has recently furnished the original schedules of the census in Nevada from 1850 to 1870. The general Pacific Slope division of the library has been enlarged by the addition of many valuable works of travel and poetry secured through second-hand dealers in pioneer history.

Newspapers. In no other field perhaps did the war threaten greater interference than in the matter of newspaper files; but the sweeping order of the War Industries Board prohibiting the distribution of free copies and of exchanges was soon modified by the provision for institutions like ours. As a result, while there are some serious gaps in our files, on the whole we have come through with a fairly complete set of papers. Much credit is due to those editors who have continued to donate newspapers during this period of high prices and scarcity of paper. The files of the two Reno dailies have been bound back to 1907. Hundreds of volumes of other state papers are waiting for adequate binding funds.

4. WORK OF ARRANGEMENT. Some cataloguing of books has been accomplished during the biennium, but the huge task of arranging and indexing pamphlet and broadside materials is still waiting on time and equipment factors. In order that the real historical value of this mountain of local stuff may not be largely lost, its permanent arrangement should be provided for while the present Secretary, who alone has knowledge of many items, can personally attend to the work.

Many museum articles are packed away for lack of space for exhibition. Nearly all of the items which are on exhibition are clearly marked, showing the nature of the article and, when donated, the name of the giver. An annex has been made out of an adjoining residence, connected with the main building by a covered hallway. This annex houses a large part of the Indian collection and the great Derby Dam canvas painting from the Southern Pacific building at the P. P. I. E. at San Francisco.

Many interested visitors have been shown through these buildings. At present, and until the plague has entirely passed, the general public is not urged to visit the building, but by special arrangement the rooms are opened when occasion requires.

5. PERMANENT EQUIPMENT. The Nevada Historical Society has never had any expensive furnishings. Its equipment is heterogeneous—picked up at sales of office furniture or made at home from pine lumber. A number of pine museum cases have recently been added and a few show-cases purchased from mercantile firms going out of business. Cataloguing equipment, typewriter and fire extinguishers have been among the absolutely necessary items of expense.

• III. FISCAL REPORT FOR 1917-1918 ON STATE APPROPRIATIONS, AND RECOMMENDATIONS AS REPORTED TO THE EXECUTIVE COUNCIL AT THE CLOSE OF THE BIENNIUM

A. Fiscal Report, 1917-1918

As you are aware, certified expenditures for the Society from state appropriations thereto have been signed by yourselves and audited by the Board of Examiners, all claims having been paid by the State Treasurer in the same manner as with other State departments.

Receipts	\$6,000.00
Disbursements—	
Lights and water	\$280.95
Fuel	553.14
Telegrams and telephones	69.38
Express, freight and transfer	37.75
Traveling expenses	195.61
Supplies, equipment, building, grounds	1,083.07
Postage	87.49
Purchase of books and museum articles	326.74
Printing and binding	810.92
Labor and salary of assistants	1,754.95
Rent for annex	800.00
	<hr/> \$6,000.00

B. Recommendations to the Executive Council

1. *Need of Collecting Pioneer History.* When so many of our pioneers are each year passing away without having left a written record of their experiences in the early days of Nevada, and when pioneer historical materials are daily being destroyed for lack of appreciation of their value or through fires in temporary camps, it would seem to be self-evident that ways and means should in some way be provided for more active and widespread work in the matter of collection. If ever this State is to be generous in the support of this work, such generosity should come now before the opportunities are gone forever.

2. *Need of Collecting War History of Nevada.* Almost as vital as the subject of our pioneer history is that of the records of the war now ending. Not only as a matter of pride for Nevadans, but as much that we may keep step with the other States of the Union and contribute our part to the federal history of the war, we should ask for an amount sufficient to cover the expense of such collection under a plan which is submitted to you in a supplementary report.

3. *Need for Yearly Instead of Biennial Publication.* Historical materials are multiplied many times in usefulness when they are put into print. Our Society should publish at least one volume a year, the Historical Papers and the Applied History volumes alternating and each appearing once in two years. Not only should we be enabled to publish more frequently, but our books should be presented in form and size other than that suitable for business reports. This will necessitate special book paper, special typesetting, together with wider margins, etc. The extra cost of such volumes would be compensated by the greater usefulness of the historical materials. Much credit is due to Hon. Joe Farnsworth and his staff for their painstaking endeavor to print our volumes in good form. However, the usual appropriations for the State Printing Office do not cover the extra expense required by volumes such as are described above.

4. *Need of a Survey of Public and Private Historical Documents in Various Counties and Towns of the State.* Particularly should this survey be made for the state, county and town archives, so that the historical student and writer may have a guide as to what is available and the location of such materials.

5. *Miscellaneous Needs.* I have so many times in my reports complained of our serious lack of room for storage and display and of the makeshift arrangements we have been obliged to employ, that it is needless to recount these things again. More room and more assistance would solve many of our problems. Yet while historical consciousness is evolving in this State, we seek to be patient in waiting for the coming of the financial assistance which is essential to final achievement.

I submit for your consideration the following budget:

ESTIMATE OF EXPENSES FOR 1919-1920

For Current Expenses—

Lights and water.....	\$400.00	
Fuel.....	600.00	
Telegrams and telephones.....	100.00	
Express, freight and transfer.....	200.00	
Postage.....	200.00	
Purchase of books, etc.....	1,000.00	
Printing and binding.....	1,500.00	
Traveling expenses.....	500.00	
Meetings.....	100.00	
Supplies, equipment, building and grounds.....	2,500.00	
Labor and salary of assistant.....	2,900.00	
		\$10,000.00

For Collection of War History—

Assistance.....	\$1,500.00	
Traveling.....	500.00	
Supplies, printing, equipment, etc.....	1,000.00	
		3,000.00
		\$13,000.00

The above report was approved by the Council at its annual meeting.

IV. RECAPITULATION OF THE NEEDS OF THE SOCIETY

The Secretary has sought in this brief report to state clearly the objects of the Society and to show in what measure we have been able to accomplish these purposes during the biennium just closed. She has also pointed out the serious handicap under which the work is at present done because of the lack of proper assistance, housing capacity, opportunity for publication, and maintenance of field work. By dint of the most rigid economy and a careful choice of the most important and urgent lines of activity, considerable progress has been made in past years, as our publications and building bear witness. But with the present high prices of materials and labor, traveling, etc., the task of keeping the work up to its present standard of efficiency is an impossible one unless larger funds are available. The need of expanding and going beyond the present standard, particularly in the pressing matter of war-history collection, has been presented in this report. A half-hour spent in visiting the building should convince even the most skeptical of the value of the work and the need of a more generous support. A study of the activities of other States will lead to the same conclusion. Our sister States are today spending many thousands each on the matter of

war history alone. Shall Nevada, who justly points with pride to her war record, allow that record to be lost to future generations because of a mistaken economy now at this critical period.

Very respectfully yours,

JEANNE ELIZABETH WIER,

Secretary.

NOTE—For lack of time this business report, which should have contained other items, such as the president's report, list of officers, members, etc., has been abbreviated. The missing items will appear in the next volume of historical papers which will be edited during the present year.

STATE OF NEVADA

STATISTICAL REPORT

OF THE

Superintendent Public Instruction

1917-1918

JOHN EDWARDS BRAY
Superintendent of Public Instruction



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : : JOE FARNSWORTH, SUPERINTENDENT

1919



LETTER OF TRANSMITTAL

STATE OF NEVADA,
DEPARTMENT OF EDUCATION,
CARSON CITY, NEVADA, December 31, 1918.

To His Excellency, EMMET D. BOYLE, Governor of the State of Nevada.

SIR: In compliance with the provisions of law, I have the honor herewith to submit the statistical part of my Biennial Report of the Superintendent of Public Instruction for the years 1917 and 1918.

Very respectfully yours,

A handwritten signature in cursive script, reading "John Edwards Pray". The signature is written in dark ink and is positioned above the printed name of the Superintendent of Public Instruction.

Superintendent of Public Instruction.

CARE OF DEAF AND BLIND, AND FEEBLE-MINDED

Owing to the fact that complete financial statistics for the last half of the year 1918 were not available at the time the nonstatistical portion of my report went to press, there is submitted herewith the remainder of the report covering the care of the deaf and blind at Berkeley and of the feeble-minded at Santa Clara, Cal.:

Care of Deaf and Blind at California School for the Deaf and the Blind at Berkeley from July 1, 1918, to January 1, 1919

John Anderson, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	\$170.00
H. Backlund, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
F. Brown, July 1, 1918, to August 31, 1918, 2 months at \$340 per year.....	56.66
E. Dowling, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
R. Donnelly, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
J. Devencenzi, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
J. Gibellini, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
R. Pittman, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
E. Staute, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
M. Christopher, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
H. Hoskins, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
M. Gallagher, September 1, 1918, to December 31, 1918, 4 months at \$340 per year.....	113.33
R. McClure, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
W. Gerry, July 1, 1918, to December 31, 1918, 6 months at \$340 per year.....	170.00
I. Looz, September 1, 1918, to December 31, 1918, 4 months at \$340 per year.....	113.33
M. Oliver, September 1, 1918, to December 31, 1918, 4 months at \$340 per year.....	113.33
Total for care and training.....	\$2,436.65
For clothing for above period.....	10.50
	\$2,447.15

Care of Feeble-Minded at Santa Clara from July 1, 1918, to January 1, 1919

Grace Sullivan, 6 months at \$35 per month.....	\$210.00
William Cook, 6 months at \$35 per month.....	210.00
James Barrett, September 11, 1918, to December 31, 1918, at \$35 per month.....	128.34
James Barrett, transportation.....	3.50
Total from July 1, 1918, to January 1, 1919.....	\$551.84

RECORD OF EDUCATIONAL CERTIFICATES

The record of certificates given in this report is for the years 1917 and 1918, except as to the temporary certificates. The latter are published in full for ready reference, as no teacher can be issued more than one thereof.

STATE CERTIFICATES

Of the High-School Grade, issued to graduates of the University of Nevada, Department of Liberal Arts, who have taken the required work in Pedagogy

To whom issued	When issued	To whom issued	When issued
Leah Barker.....	June 9, 1917	Helena J. Shade.....	June 9, 1917
Ellen Isabel Bertschy.....	June 9, 1917	Dorris L. Taylor.....	June 9, 1917
Chester Allyn Brennen.....	June 9, 1917	Eva A. Walker.....	June 9, 1917
Agnes Constable.....	June 9, 1917	Wilfrid L. Wylie.....	June 9, 1917
Marjorie Cowgill.....	June 9, 1917	Margaret A. Langwith.....	Jan. 19, 1918
Elsie Dorsey Farrar.....	June 9, 1917	Elizabeth Dorris Bailey.....	June 1, 1918
Juanita Frey.....	June 9, 1917	Jeanne Magdalena Bertschy.....	June 1, 1918
Edith Clare Harris.....	June 9, 1917	Myrtle Cameron.....	June 1, 1918
Edith Simpson Harris.....	June 9, 1917	Georgia C. Damm.....	June 1, 1918
Dorothy Hempton.....	June 9, 1917	Donna Dyke.....	June 1, 1918
Margaret Alvina Heuer.....	June 9, 1917	Grace Anita Fuss.....	June 1, 1918
Elsie L. Humphreys.....	June 9, 1917	Lia S. Harniss.....	June 1, 1918
Margaret Kemper.....	June 9, 1917	Blanche Teresa Lothrop.....	June 1, 1918
Marguerite J. MacIver.....	June 9, 1917	Helen Elizabeth Macet.....	June 1, 1918
Dorothy A. Morrison.....	June 9, 1917	Laura Mercedes Rains.....	June 1, 1918
George F. Ogilvie*.....	June 9, 1917	Eleanor Hulda Shartel.....	June 1, 1918
Ruth A. Pyle.....	June 9, 1917	Emma Lou Singer.....	June 1, 1918

*B.S. degree with required work in Education. †M.A. degree with required work in Education.

FIRST-GRADE ELEMENTARY STATE CERTIFICATES

Issued to Graduates of the College of Education, University of Nevada,
Elementary Course, good for five years

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Laila M. Baker	June 9, 1917	Mrs. Maud Warren Johnson	Jan. 19, 1918
Wanda Ball	June 9, 1917	Edwina Jane O'Brien	Jan. 19, 1918
Hattie Burnett	June 9, 1917	Dorris L. Taylor	Jan. 19, 1918
Elvina H. Blevins	June 9, 1917	Florence Shirley	Feb. 13, 1918
Gladys E. Colquhoun	June 9, 1917	Thelma L. Bradshaw	June 1, 1918
Erastus A. Hansen	June 9, 1917	Myrtle Frances Brown	June 1, 1918
Lawrence J. Hansen	June 9, 1917	Nellie F. Burke	June 1, 1918
Phoebe H. King	June 9, 1917	Rita Agnes Cannan	June 1, 1918
Lora B. Lamberson	June 9, 1917	Adrienne Anne Cosmat	June 1, 1918
Marguerite J. McIver	June 9, 1917	Donna Dyke	June 1, 1918
Hazel C. Murray	June 9, 1917	Grace Anita Fuss	June 1, 1918
Mary Martin	June 9, 1917	Leila Halsell	June 1, 1918
Alma J. Nichol	June 9, 1917	Mary Beatrice Harrington	June 1, 1918
Miss Jimmie Odbert	June 9, 1917	Gladys Hicks	June 1, 1918
Edna G. Pendergast	June 9, 1917	Lois Geneva Kimmel	June 1, 1918
Vivian A. Reed	June 9, 1917	Alice M. Paige	June 1, 1918
Kathryn E. Rupp	June 9, 1917	Maud Ellen Porch	June 1, 1918
Elda Marian Barber	Oct. 2, 1917	Eleanor Hulda Shartel	June 1, 1918
Agnes Constable	Oct. 2, 1917	Laura Mercedes Rains	June 1, 1918
Juanita Frey	Oct. 2, 1917	Georgiana Steiner	June 1, 1918
Margaret Kemper	Oct. 2, 1917	Alma Kate Stroud	June 1, 1918
Mrs. Florence Abel Lowry	Oct. 2, 1917	M. Clysta Vann	June 1, 1918
Grace Cecile Mahan	Oct. 2, 1917	Lessie Valeria Wardle	June 1, 1918
Gertrude Alice Shade	Oct. 2, 1917	Mrs. Juanita Young Clemmons	Sept. 25, 1918
Elsie L. Humphreys	Jan. 19, 1918	Clara Choate Holloway	Oct. 17, 1918

FIRST-GRADE ELEMENTARY CERTIFICATES

Granted on High-School Certificate Credentials. Those granted on Nevada credentials are good for five years; those granted on credentials from other States are good for three years

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Amy Haskett	Oct. 27, 1918	Mabelle D. Rudesill	Dec. 4, 1917
Lawrence Miller	Jan. 25, 1917	Nathalie Marie Ekrem	Dec. 11, 1917
Mrs. Myrtle N. Raymond	Feb. 21, 1917	Margaret L. Northrop	Dec. 11, 1917
T. W. Chapman	Mar. 30, 1917	Dora Lee Roberts	Dec. 11, 1917
Florence White	Mar. 30, 1917	Zelma Ellison Berry	Dec. 29, 1917
Ivey Wallens Barnett	June 9, 1917	Lois B. Benton	Jan. 19, 1918
Iolean Ruth Christensen	June 9, 1917	Sara Louise Lull	Jan. 19, 1918
Mrs. Lulu B. Hurley	June 9, 1917	Margaret Louise Vieira	Jan. 19, 1918
Stella Yocum	June 9, 1917	Edith May Hutchinson	Feb. 13, 1918
Veva Russell	July 24, 1917	Mrs. Edna Crudup Neely	Feb. 13, 1918
James Willis Eckersley	Oct. 2, 1917	Helen R. Hobbins	Mar. 30, 1918
Marie Evelyn Harvey	Oct. 2, 1917	Ruth Lee	Mar. 30, 1918
Irene C. Hollenbeck	Oct. 2, 1917	Janet Ferguson	June 1, 1918
Mrs. Ruth B. Leonard	Oct. 2, 1917	Veronica Dickey	Aug. 14, 1918
Caroline E. Melody	Oct. 2, 1917	Mrs. Lucy Grimes Burton	Sept. 25, 1918
E. Ellsworth Smith	Oct. 2, 1917	Lebbens J. Knapp	Sept. 25, 1918
Samuel Oliver Welday	Oct. 2, 1917	Evelyn T. Carus	Oct. 17, 1918
Edith Clare Harris	Dec. 4, 1917	Mabel Elizabeth Cook	Nov. 16, 1918
Cora V. Humphrey	Dec. 4, 1917	Anna Heise	Nov. 16, 1918
Mary Alice King	Dec. 4, 1917	Anna Kennedy	Nov. 16, 1918
Jessie Pearl Pope	Dec. 4, 1917	Ella May Chensault	Nov. 16, 1918
Amy Parker Powers	Dec. 4, 1917		

COUNTY NORMAL SECOND-GRADE ELEMENTARY CERTIFICATES

Issued to graduates of the County Normal Training Schools, good for three years, but not renewable

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Beatrice A. Belli	June 9, 1917	Cora Johnson	June 9, 1917
Mrs. Sadie Frederick	June 9, 1917	Lillian Neff	June 9, 1917
Nellie Halvorsen	June 9, 1917	Louise Parker	June 9, 1917
Edith J. King	June 9, 1917	Louretta Walsh	June 9, 1917
Maud C. Morgan	June 9, 1917	Laurell Tait Fleming	June 9, 1917
Alice M. Paige	June 9, 1917	Mrs. Myrtle Grayson Schmidt	June 9, 1917
Evelyn D. Stock	June 9, 1917	Fannie Holmes	June 9, 1917
Margaret E. Kenny	June 9, 1917	Laura F. Davis (2 years)	June 9, 1917
Juanita Leavitt	June 9, 1917	Helen Kinsella (provisional, 2 years)	Dec. 4, 1917
Hattie Leavitt	June 9, 1917	Charlotte Holder Laird	July 6, 1918
Leon C. Bowman	June 9, 1917	K. Maud Harris	July 6, 1918
Percilla Leavitt	June 9, 1917	Elsie M. Hooper	July 6, 1918
ne Dunn	June 9, 1917	Winifred R. J. Smith	July 6, 1918
ne Dunn	June 9, 1917	Berenyce Lucille Moore	July 6, 1918
l Hill	June 9, 1917	Edith Burns	July 6, 1918

SECOND-GRADE ELEMENTARY CERTIFICATES

Issued to students of the first-year course of the Nevada State Normal,
good for three years, but not renewable

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Geraldine Maude Clayton	June 9, 1917	Ann Gordon	June 1, 1918
Ethel Roberta Creek	June 9, 1917	Margaret Gertrude Hunkin	June 1, 1918
Martha W. Folsom	June 9, 1917	Ruth Hurd LaKamp	June 1, 1918
Hazel Hannah Francis	June 9, 1917	Mabelle E. Nelson	June 1, 1918
Lela Halseil	June 9, 1917	Ruth Raymond	June 1, 1918
Mary B. Harrington	June 9, 1917	Lottie M. Ross*	June 1, 1918
Eugenia S. Langwith	June 9, 1917	Theresa Frances Schulz	June 1, 1918
Mrs. Ruth Fowler Mason	June 9, 1917	Edith Mae Smith	June 1, 1918
Marce Thomas Pohlé	June 9, 1917	Ethel Walker	June 1, 1918
Alma Kate Stroud	June 9, 1917	Ethel Welsh	June 1, 1918
Ruth E. Carter	Oct. 2, 1917	Claire Hofer	Sept. 25, 1918
Velma Markwell	Oct. 2, 1917	Adeline Savery	Sept. 25, 1918
Mrs. Mildred Williams-Campbell	Mar. 30, 1918		

*Certificate cannot be issued until 1919 on account of age.

HIGH-SCHOOL CERTIFICATES ON EXAMINATION

None.

HIGH-SCHOOL STATE CERTIFICATES

Granted on credentials from other States

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Wilford Woolf	Sept. 28, 1916	Lottie Ward	Oct. 2, 1917
Lora Butler	Oct. 27, 1916	Samuel Oliver Welday	Oct. 2, 1917
Amy Haskett	Oct. 27, 1916	Cora V. Humphrey	Dec. 4, 1917
Ina Pauline Aikens	Jan. 25, 1917	Mary Alice King	Dec. 4, 1917
Lela Olive Ellis	Jan. 25, 1917	David W. Lindsay	Dec. 4, 1917
Adelbert I. Greene*	Jan. 25, 1917	Anna Mohr	Dec. 4, 1917
Gordie C. Hulbert	Jan. 25, 1917	Mrs. Edna Cradup Neely	Dec. 4, 1917
Clarence D. Herriot	Jan. 25, 1917	Severina M. Salmina	Dec. 4, 1917
William Neff Rutledge*	Jan. 25, 1917	Nathalie Marie Ekrem	Dec. 11, 1917
Earl Vincent Hawley*	Jan. 25, 1917	Margaret L. Northrup	Dec. 11, 1917
Mildred D. Harding	Feb. 13, 1917	Dora Lee Roberts	Dec. 11, 1917
T. W. Chapman	Mar. 30, 1917	Sara Louise Lull	Jan. 19, 1918
Elmer E. Franklin	Mar. 30, 1917	Maynard R. Buckles	Feb. 13, 1918
Elizabeth Jacobson	Mar. 30, 1917	Maude Louise Eckel	Feb. 13, 1918
Sarah Maud Price	Mar. 30, 1917	Anna Field	Feb. 13, 1918
Grace Partridge	Mar. 30, 1917	Edith May Hutchinson	Feb. 13, 1918
Mary C. Costello	June 9, 1917	Minnie Rosella Snorin	Feb. 13, 1918
Ivey Wallens Barnett	June 9, 1917	Hazel Ernestine Vollmer	Feb. 13, 1918
Ralph L. Rich*	June 9, 1917	Stella May Van Dyke	Mar. 30, 1918
Anna J. Rieve	June 9, 1917	Janet Ferguson	June 1, 1918
Lois B. Benton	July 24, 1917	William Reed Bishop	June 1, 1918
Agnes Campbell Clive	July 24, 1917	Lavina Mullie (provisional)	July 6, 1918
Gladys M. Frary	July 24, 1917	George T. Beach	July 6, 1918
L. Ross Johnson* (provisional)	July 24, 1917	June Creel	July 6, 1918
Mason Allen Johnston	July 24, 1917	Lewis Avery Pringle	July 6, 1918
Hattie Belle Paul	July 24, 1917	Anna Eva Maxwell	July 6, 1918
Grace E. Russell	July 24, 1917	Jesse J. Beatty	July 6, 1918
Amasa C. Smith	July 24, 1917	Harold W. B. Baker	Aug. 14, 1918
I. L. Ullery	July 24, 1917	Mrs. Rhoda B. Rand* (provisional)	Aug. 14, 1918
Clara Emma Balmat	Oct. 2, 1917	Dorothy Havens Gilcrest	Aug. 14, 1918
Laura Belt	Oct. 2, 1917	Edna Baer	Sept. 25, 1918
Ammon L. Bolts	Oct. 2, 1917	Wilma Evelyn Miles	Sept. 25, 1918
Merrill J. Burr	Oct. 2, 1917	Paul H. Neuman (provisional)	Sept. 25, 1918
Bessie Myrenda Courtright	Oct. 2, 1917	Jesse R. Crandall (provisional)	Sept. 25, 1918
James Willis Eckersley	Oct. 2, 1917	Elizabeth Coolidge (provisional)	Sept. 25, 1918
Constance Edmunds	Oct. 2, 1917	Zella Rebecca Dorton	Sept. 25, 1918
Ralph Imes	Oct. 2, 1917	Lebbens J. Knapp	Sept. 25, 1918
Bertha Lee Jackson	Oct. 2, 1917	Maybelle Lena Hudson	Sept. 25, 1918
Samuel J. Keusch	Oct. 2, 1917	L. E. McFadden (provisional)	Sept. 25, 1918
Alexander Kubitz	Oct. 2, 1917	Ruth Woodward Perry	Sept. 25, 1918
Mrs. Ruth B. Leonard	Oct. 2, 1917	Clara G. Alexander	Sept. 25, 1918
E. L. Liljenquist	Oct. 2, 1917	Perry H. Benson	Sept. 25, 1918
A. R. Mack	Oct. 2, 1917	Ruth Emma Goodsell	Sept. 25, 1918
Max W. Meharg (provisional)	Oct. 2, 1917	Pearl E. Shannon	Sept. 25, 1918
Caroline E. Melody	Oct. 2, 1917	Mila L. Coffin	Sept. 25, 1918
Ina V. Meredith	Oct. 2, 1917	Ruth Lee	Oct. 17, 1918
Claude L. Neely	Oct. 2, 1917	E. Otis Vaughn	Oct. 17, 1918
William Gerry Rector	Oct. 2, 1917	Anna C. Taylor	Oct. 17, 1918
Hero E. Rensch	Oct. 2, 1917	Mavis Viola Smith	Oct. 17, 1918
Charles Andrew Robinson	Oct. 2, 1917	Jonathan T. Perigo	Oct. 17, 1918
Edith Small	Oct. 2, 1917	Evelyn T. Carus	Oct. 17, 1918
Helen M. Smith	Oct. 2, 1917	Edna M. Fleming	Oct. 17, 1918
Henry C. Stotlar (provisional)	Oct. 2, 1917	Charles Henry Dean	Oct. 17, 1918
Mamie Sullivan	Oct. 2, 1917	Margaret Powers Taylor	Oct. 17, 1918
Ellen Elizabeth Trewick	Oct. 2, 1917	Nelle Lavela Wilkinson	Nov. 16, 1918
May Violet Wallace	Oct. 2, 1917	Isabelle Georgie McKinnell	Nov. 16, 1918

*Examination in History and Methods.

HIGH-SCHOOL STATE CERTIFICATES—Continued

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Ethel Abbie Hurlbut (provisional)	Nov. 16, 1918	Mable Elizabeth Cook	Nov. 16, 1918
William A. Hendershot	Nov. 16, 1918	Louise Marie Rhein	Nov. 16, 1918
Corinne Ida Kipp	Nov. 16, 1918	Ella May Chenault	Nov. 16, 1918

FIRST-GRADE ELEMENTARY STATE CERTIFICATES

Granted on credentials from other States

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Grace Clark	Oct. 27, 1918	Mrs. Lulu Oliver Daniels	Oct. 2, 1917
Mary Fae Snyder	Dec. 27, 1918	Estelle F. Daly	Oct. 2, 1917
Ina Pauline Akins	Jan. 25, 1917	Mrs. Anna Davenport Fitzgerald	Oct. 2, 1917
Joseph E. Millen (Theory and Method)	Jan. 25, 1917	Dorothy Ida Fuller	Oct. 2, 1917
Mary Bryant Dale	Jan. 25, 1917	Eleanor Louise Hasenkamp	Oct. 2, 1917
Eleanor C. Freeman	Jan. 25, 1917	Minnie Henco	Oct. 2, 1917
Eileen Everett (Theory and Method)	Jan. 25, 1917	Alida Hendrick	Oct. 2, 1917
Leonard Burtram Garner	Jan. 25, 1917	Mabel Hendrick	Oct. 2, 1917
Irene Lamb	Jan. 25, 1917	Inez C. Herre	Oct. 2, 1917
Charles A. Leininger	Jan. 25, 1917	Araminta C. Howe	Oct. 2, 1917
Anna Opal Fleener	Jan. 25, 1917	M. Josephine Jeffries	Oct. 2, 1917
Clarence McMillen	Jan. 25, 1917	Arlie Frances Jones	Oct. 2, 1917
Maude E. Pettibone	Jan. 25, 1917	Elizabeth K. Kreischer	Oct. 2, 1917
Edna H. Buck	Mar. 30, 1917	Jessie C. Loel	Oct. 2, 1917
Walter Gilbert Coombs	Mar. 30, 1917	Dwight M. Lydell	Oct. 2, 1917
Catherine French	Mar. 30, 1917	Lawrence L. Miller	Oct. 2, 1917
George T. Hanscom (provisional)	Mar. 30, 1917	Lucy H. Miller	Oct. 2, 1917
Susie Olive McGinley	Mar. 30, 1917	Katherine Neiley	Oct. 2, 1917
Marie M. Myers	Mar. 30, 1917	Lily Belle Oest	Oct. 2, 1917
William Calvin Mathews	Mar. 30, 1917	Constance Catharin Pardoe (granted, not issued)	Oct. 2, 1917
Marjorie Richmond	Mar. 30, 1917	Mary A. Proyse	Oct. 2, 1917
Heleen A. Sander	Mar. 30, 1917	Wilhelmina Purcell	Oct. 2, 1917
Ada Catherine Samson	Mar. 30, 1917	Mrs. Mary E. Rosebrough	Oct. 2, 1917
Adelaide Wride	Mar. 30, 1917	Carolyn Helena Ruf	Oct. 2, 1917
Dorris Whipple	Mar. 30, 1917	Alice Silliman	Oct. 2, 1917
Stella Washburn	Mar. 30, 1917	Ida Pearl Smith	Oct. 2, 1917
Eva Yeager	Mar. 30, 1917	Mrs. Lillian Rasmussen	Oct. 2, 1917
Ruth B. Winn	Mar. 30, 1917	Aleta M. Venable	Oct. 2, 1917
Ellen Louise Morrall	June 9, 1917	Alice E. Spencer	Oct. 2, 1917
Mary Elizabeth Berry	June 9, 1917	Elsie Adams	Dec. 4, 1917
Mary C. Costello	June 9, 1917	Helen Cecelia Adams	Dec. 4, 1917
Marguerite M. Classen	June 9, 1917	Mabel Lucille Barnes	Dec. 4, 1917
Mrs. Lois H. Koford	June 9, 1917	Rena Barnett	Dec. 4, 1917
Lois E. Osborn	July 24, 1917	Blanch Esther Berry	Dec. 4, 1917
Mrs. Alice Thomas Gosewisch	July 24, 1917	Clarence A. Brittell	Dec. 4, 1917
Edna E. Kilmore	July 24, 1917	Dorothy Burns	Dec. 4, 1917
Joseph Martin	July 24, 1917	Beulah Fern Chaffee	Dec. 4, 1917
Mrs. D. Z. Zinn	July 24, 1917	Jessie Mae Chase	Dec. 4, 1917
Marguerite Crotty (Theory & Method)	Oct. 2, 1917	Dorothy Edmonds	Dec. 4, 1917
Dorothy D. Adams	Oct. 2, 1917	Bertha E. Gilbert	Dec. 4, 1917
Helen Lough Armstrong	Oct. 2, 1917	Ada Rosaline Ivey	Dec. 4, 1917
Mrs. Mary W. Ball	Oct. 2, 1917	Hazel A. Lewis	Dec. 4, 1917
John Banks	Oct. 2, 1917	Anna O. Miller	Dec. 4, 1917
Emma Bergman	Oct. 2, 1917	Mrs. Lila H. McCutcheon	Dec. 4, 1917
Mrs. E. Winship Biederman	Oct. 2, 1917	George O. Ray	Dec. 4, 1917
Martha Agnes Bihler	Oct. 2, 1917	Ethel G. Reeves	Dec. 4, 1917
Sadie Boomhower	Oct. 2, 1917	Grace L. Ridgway	Dec. 4, 1917
Goldie May Carrell	Oct. 2, 1917	Clara E. Russell	Dec. 4, 1917
Pearl May Cawelti	Oct. 2, 1917	Bertha B. Shearer	Dec. 4, 1917
Helene Gertrude Coates	Oct. 2, 1917		

FIRST-GRADE ELEMENTARY STATE CERTIFICATES

Granted on credentials from other States

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Ruby Shepard	Dec. 4, 1917	Mrs. Lillian Gimblin Chester	Feb. 13, 1918
Cecelia Frances Stromberg	Dec. 4, 1917	Rena M. Gannon	Feb. 13, 1918
Stanley E. Thompson	Dec. 4, 1917	W. B. Gibson	Feb. 13, 1918
Vera L. Webb	Dec. 4, 1917	Helena M. Teping	Feb. 13, 1918
Beatrice K. Weigle	Dec. 4, 1917	Pearl Vaughan	Feb. 13, 1918
Belle H. Burdick	Dec. 11, 1917	L. Pearl Boatner (Theory and Method)	Mar. 30, 1918
Irma Ferguson	Dec. 11, 1917	Henrietta H. Goode	Mar. 30, 1918
John W. Maloy	Dec. 11, 1917	Rose Georgian	Mar. 30, 1918
Lulu Pennington	Dec. 11, 1917	Ruby Mae Gunn	Mar. 30, 1918
Mrs. W. N. Perdue (provisional)	Dec. 11, 1917	Florence Koehler	Mar. 30, 1918
Beth Marian Yeager	Dec. 11, 1917	Clarisse Pauline Scott	Mar. 30, 1918
Mabel Agnes Bockoven	Dec. 29, 1917	Thelma Winifred Trevellick	Mar. 30, 1918
Ramona Parsons	Dec. 29, 1917	Elizabeth Asmus	June 1, 1918
Caroline I. Pfau	Dec. 29, 1917	Ina Elberta Barker	June 1, 1918
Helen Jean Ramsey	Dec. 29, 1917	Margaret C. Connors	June 1, 1918
Frances I. Donnelly	Jan. 19, 1918	Mrs. Margaret Coleman Ely	June 1, 1918
Leda Brewington	Jan. 19, 1918	Sara Henningan	June 1, 1918
Samuel B. Chesnut	Jan. 19, 1918	Mrs. Maud Little Hoag	June 1, 1918
Mrs. Della Guggenmos Ames	Feb. 13, 1918	Marie Huntress Perley	June 1, 1918

FIRST-GRADE ELEMENTARY STATE CERTIFICATES**Granted on credentials from other States.**

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Fay Harris	Aug. 14, 1918	Marguerite Furlong	Sept. 25, 1918
Barbara Higginbotham	Aug. 14, 1918	Joanna Parker Nixon	Sept. 25, 1918
Una Johns	Aug. 14, 1918	Mrs. Lavina DeWitt Nelson	Sept. 25, 1918
Alice Edith Hadfield Teter	Aug. 14, 1918	Rose Morrison	Oct. 17, 1918
Hazel Almutb Pendleton	Aug. 14, 1918	Ethel Abbie Hurlbut	Oct. 17, 1918
Mary Josephine Rorig	Aug. 14, 1918	Mrs. Elizabeth S. Vineyard	Oct. 17, 1918
Mrs. Gertrude Fugh Lobdell (prov.)	Aug. 14, 1918	Jennie Goff	Oct. 17, 1918
Mrs. Roda B. Rand	Aug. 14, 1918	Ruth M. Baldwin	Oct. 17, 1918
Alice Caroline Johnson	Aug. 14, 1918	Mrs. Mary Louise Golden	Oct. 17, 1918
Mrs. Madge Raycraft (provisional)	Aug. 14, 1918	Mrs. Anna F. Woodard	Oct. 17, 1918
Bertha Hull Hitt	Sept. 25, 1918	Eugenie D. Becker	Oct. 17, 1918
Ruth Elizabeth Thompson	Sept. 25, 1918	Mary Elizabeth Larson	Oct. 17, 1918
Effe Gertrude Hunt	Sept. 25, 1918	Addie Canfield	Oct. 17, 1918
Harriet May Tidmarsh	Sept. 25, 1918	Mrs. Lucybeth Gordon	Oct. 17, 1918
Florence Goodale	Sept. 25, 1918	Ella Verna Swann	Oct. 17, 1918
Alta Mae Byrne	Sept. 25, 1918	Lelah Maerie Stone	Oct. 17, 1918
Olivia Anita Jewell	Sept. 25, 1918	Mrs. Valeria Secor Crandal	Oct. 17, 1918
Katharyn Elizabeth Davis	Sept. 25, 1918	Mary Willoughby	Oct. 17, 1918
Myrtle Jane McGrath	Sept. 25, 1918	Grace Ellen Steinman	Oct. 17, 1918
Ethel L. Bartow	Sept. 25, 1918	Wilma Louise Snowball	Oct. 17, 1918
Gladys Marie Cottrell	Sept. 25, 1918	Ellen Munroe	Oct. 17, 1918
L. E. McFadden	Sept. 25, 1918	Louise A. Bassette	Oct. 17, 1918
Mrs. Agnes O'Connell Hamilton (prov.)	Sept. 25, 1918	Lena May Hudson	Oct. 17, 1918
Anna M. Moore (provisional)	Sept. 25, 1918	Mrs. Nell Rathbun Hilton	Oct. 17, 1918
Mary Elizabeth Harcourt	Sept. 25, 1918		

FIRST-GRADE ELEMENTARY STATE CERTIFICATES**Granted on credentials from other States**

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Carolyn Ruth Close	Nov. 16, 1918	E. Fern James	Nov. 16, 1918
Mrs. Mabel Howard Smith	Nov. 16, 1918	Marian Kirk Davidson	Nov. 16, 1918
Mrs. Fredrecha Nash Atwood	Nov. 16, 1918	Samuel Orr Long	Nov. 16, 1918
Mrs. Jessie A. Morris	Nov. 16, 1918	Georgeann K. Malony (provisional)	Nov. 16, 1918
Rosa Ruth Pawley	Nov. 16, 1918	Marie Main Frost (provisional)	Nov. 16, 1918
Ruth M. Venberg	Nov. 16, 1918	Lorena McAlpine Upson	Nov. 16, 1918
Hannah de Groot	Nov. 16, 1918	Agnes S. Thompson (provisional)	Nov. 16, 1918
Louella Moore Raper	Nov. 16, 1918	Amy Briley (provisional)	Nov. 16, 1918
Mary Gertrude McNamara	Nov. 16, 1918		

SECOND-GRADE ELEMENTARY CERTIFICATES**Granted on credentials from other States**

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Mrs. Cordelia Hays Dolan	July 24, 1917	Mrs. Helen DeMoisy Reader*	Mar. 6, 1918
Emeline Reilly*	Aug. 21, 1917	Lea Leavitt†	Mar. 30, 1918
Mrs. Ellen E. Goldsborough	Dec. 4, 1917	Mrs. Edna Wadsworth Lee (provisional)	
Roy W. Jamest	Dec. 4, 1917	for school year 1918-19	Aug. 14, 1918
Hazel Mitchell†	Dec. 11, 1917	Emeline Reilly	Oct. 17, 1918

*Provisional.

†Entitled to first-grade certificate when age requirement is met.

‡Good only for second half of school year 1917-18.

STATE CERTIFICATES**Granted on examination**

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Minnie E. Savery	Feb. 1, 1918	Julia Schlinger	July 24, 1917
Gladys Dixon	Jan. 25, 1917	Hazel Westfall	July 24, 1917
Nevada Johnson	Jan. 25, 1917	Stella Gianoli	July 24, 1917
Mrs. Eula F. McMullen	Jan. 25, 1917	Ann O'Brien (Summer Session)	Oct. 2, 1917
Ethel Neilson	Jan. 25, 1917	Geraldine M. Breen	Jan. 7, 1918
Leah I. Schraeder	Jan. 25, 1917	Mrs. Sadie Frederick	Jan. 7, 1918
Margie Lake	June 9, 1917	Anna E. Malley	Jan. 7, 1918
Ruth Atcheson	July 24, 1917	Maude McFadin	Jan. 7, 1918
Echo B. Bish	July 24, 1917	Mrs. Ethel McGuire	Jan. 7, 1918
Dorothy Cousins	July 24, 1917	Anna Oudila	Jan. 7, 1918
Miriam Egan	July 24, 1917	Leora Peter	Jan. 7, 1918
Nellie G. Harbaugh	July 24, 1917	Theo Irene Smart	Jan. 7, 1918
Mrs. Julia Hastings	July 24, 1917	Eileen Breen (provisional)	Feb. 13, 1918
Bertha Heinze	July 24, 1917	Ysabel Rising	Feb. 13, 1918
Esther McCanse	July 24, 1917	Frankie Hill	July 6, 1918
Jeanette Roberts	July 24, 1917	Irene Snow	July 6, 1918

STATE CERTIFICATES—Continued

SECOND GRADE ELEMENTARY

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Mrs. Julia Hastings	July 8, 1916	Lucille Golden (and Summer School)	Oct. 2, 1917
Mrs. Rachel Cottrell	Jan. 25, 1917	Robert S. Martin (provisional)	Nov. 6, 1917
Mrs. Ruth V. Cushman	Jan. 25, 1917	Mazie Reid	Dec. 4, 1917
Barbers Elwell	Jan. 25, 1917	Algot E. Anderson	Jan. 7, 1918
G. Stanley Mills	Jan. 25, 1917	Claire J. Beach	Jan. 7, 1918
Mrs. Pearl Freemeyer	Mar. 30, 1917	Mabel Canavan (and College credits)	Jan. 7, 1918
Reva B. Simpson	June 9, 1917	Lois R. Carter	Jan. 7, 1918
Ethel Clayton	July 24, 1917	Mrs. Martha Cox (provisional)	Jan. 7, 1918
Fern Douglas	July 24, 1917	Thelma Cox	Jan. 7, 1918
Estella Gianoli*	July 24, 1917	Henrietta R. Haywood	Jan. 7, 1918
Fannie R. Higgins	July 24, 1917	Marguerite A. Heller	Jan. 7, 1918
Ella Hildebrand	July 24, 1917	Devona Jensen	Jan. 7, 1918
Lillie Ivins	July 24, 1917	Flora H. Melendy	Jan. 7, 1918
Rowena Lee	July 24, 1917	Dorothy Raycraft (provisional)	Jan. 7, 1918
Josephine Legate	July 24, 1917	Marion Royce (and Normal credit)	Jan. 7, 1918
Walter V. Long	July 24, 1917	Frances Sanders	Jan. 7, 1918
Mrs. Katherine Morse	July 24, 1917	Heleen Stimson (and Normal credits)	Jan. 7, 1918
Ann O'Brien	July 24, 1917	Rose M. Jones	July 6, 1918
Claire M. Pierson	July 24, 1917	Charlotte Lovegrove	July 6, 1918
Ada Sharkey	July 24, 1917	Mary I. Bell	July 6, 1918
Mary Syphus	July 24, 1917	Lillian Meiss	July 6, 1918
Caroline M. Taylor	July 24, 1917	Mary Bowman	July 6, 1918

*Entitled to first grade when age requirement is met.

THIRD-GRADE ELEMENTARY

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Lola Heckthorn	Jan. 25, 1917	Mrs. Charlotte B. Wardrop	Jan. 25, 1917
Jeanette Roberts	Jan. 25, 1917	Susan Geer	Feb. 13, 1918
Julia Schlinger	Jan. 25, 1917	Anna C. Salt	Feb. 13, 1918

SPECIAL CERTIFICATES

<i>To whom issued</i>	<i>Subject</i>	<i>When issued</i>
Ina Pauline Akins	Commercial	Jan. 25, 1917
Mildred Caton	Commercial	Jan. 25, 1917
Mrs. Mabel Gunn	Music	Jan. 25, 1917
Mrs. Lenore S. Hanby	Music	Jan. 25, 1917
L. Ross Johnson	Agriculture	Feb. 13, 1918
Diantha Hammond	Sewing	Mar. 30, 1917
Elmer E. Franklin	Manual Training	Mar. 30, 1917
Mrs. Mabel Lothrop	Sewing	Mar. 30, 1917
Mrs. Mabel Lothrop	Music	Mar. 30, 1917
Robert S. Martin	Physical Education	Mar. 30, 1917
Soren M. Robertson	Manual Training	June 9, 1917
Mrs. Minerva D. Pierce	Art	June 9, 1917
Wilfrid Lamont Wylie	Manual Training	June 9, 1917
R. L. Waggoner	Stenography and Commercial Law	June 9, 1917
Frank Kenyon	Manual Training	June 9, 1917
Joe D. Scott	Physical Training and Civics	June 9, 1917
J. Albert Baker	Manual Training	July 24, 1917
J. Albert Baker	Commercial	July 24, 1917
Emily Spalenka	Music and Drawing	July 24, 1917
Carrie H. Allen	Commercial	Oct. 2, 1917
Clara Emma Balmat	Commercial	Oct. 2, 1917
Ida Louise Brewington	Music	Oct. 2, 1917
Beasie Myranda Courtright	Stenography and Typewriting	Oct. 2, 1917
Gwynne Stuart Davis	Kindergarten-Primary	Oct. 2, 1917
Norma J. Davis	Home Economics	Oct. 2, 1917
May Dunlop	Music	Oct. 2, 1917
Constance Edmunds	Commercial	Oct. 2, 1917
Lottie Frances Feeley	Commercial	Oct. 2, 1917
Edith Simpson Harris	Domestic Arts—1st and 2d year Sewing (1 year)	Oct. 2, 1917
T. S. Hook	Typewriting	Oct. 2, 1917
T. S. Hook	Physical Training	Oct. 2, 1917
L. Ross Johnson	Commercial	Oct. 2, 1917
L. Ross Johnson	Physical Training	Oct. 2, 1917
Mrs. Minnie Rector Kuykendall	Commercial	Oct. 2, 1917
John R. Montgomery	Physical Training	Oct. 2, 1917
Katharine H. Murphy	Commercial	Oct. 2, 1917
Max W. Meharg	Manual Training	Oct. 2, 1917
Ora Ethel Neff	Science	Oct. 2, 1917
Ora Ethel Neff	Physical Training	Oct. 2, 1917
Katharine Neiley	Cooking and Sewing	Oct. 2, 1917
Jessie Pearl Pope	Domestic Science	Oct. 2, 1917
Charles Priest	Physical Training	Oct. 2, 1917
Hero E. Resch	Manual Training and Mechanical Drawing	Oct. 2, 1917
R. A. Rossi	Physical Training	Oct. 2, 1917
M. P. Sherman	Commercial	Oct. 2, 1917
Edith Small	Commercial	Oct. 2, 1917
Amasa C. Smith	Manual Training	Oct. 2, 1917
Amasa C. Smith	Physical Training	Oct. 2, 1917
Stanley L. Smith	Bookkeeping	Oct. 2, 1917

SPECIAL CERTIFICATES—Continued

<i>To whom issued</i>	<i>Subject</i>	<i>When issued</i>
Helen Stimson	Music	Oct. 2, 1917
Helen Stimson	Home Economics	Oct. 2, 1917
Webster H. Stone	Manual Training and Mechanical Drawing	Oct. 2, 1917
Ruth Frances Stoney	Domestic Science	Oct. 2, 1917
Gladine Tuller	Physical Training	Oct. 2, 1917
Nettie Maud Vines	Drawing, Basketry and Primary Construction	Oct. 2, 1917
Lottie Ward	Home Economics	Oct. 2, 1917
Margaret E. Walbridge	Domestic Science	Oct. 2, 1917
Inez Mildred Walsh	Stenography and Typewriting	Oct. 2, 1917
Inez Mildred Walsh	Domestic Science	Oct. 2, 1917
May Violet Wallace	Home Economics	Oct. 2, 1917
P. T. Welles (provisional)	Mathematics	Oct. 2, 1917
P. T. Welles	Manual Training	Oct. 2, 1917
Mrs. Carolyn Neave Wilkie	Stenography and Typewriting	Oct. 2, 1917
Mrs. W. J. Wilson	Domestic Science (one year)	Oct. 2, 1917
Edith Gwendolyn Wooldrige	Commercial	Oct. 2, 1917
William Hardcastle Wright	Commercial	Oct. 2, 1917
Lutie Britt	Physical Training	Nov. 28, 1917
Elmer E. Franklin	Physical Training	Dec. 4, 1917
Grace Lee Ridgway Gill	Domestic Science in Elementary Grades (prov.)	Dec. 4, 1917
Grace Lee Ridgway Gill	Kindergarten (provisional)	Dec. 4, 1917
Virgilia Galnouer	Music	Dec. 4, 1917
Marion Allen Harrison	Agriculture	Dec. 4, 1917
George C. Jensen	Physical Training	Dec. 4, 1917
Kathryn R. Peckenpaugh	Home Economics	Dec. 4, 1917
Ralph L. Rich	Physical Training	Dec. 4, 1917
Severina M. Salmina	Commercial	Dec. 4, 1917
Eva Anna Walker	Physical Training	Dec. 4, 1917
Edith G. Wooldrige	English and Spanish	Dec. 4, 1917
Edith G. Wooldrige	Commercial Arithmetic	Dec. 4, 1917
Walter W. Anderson	Physical Training	Dec. 11, 1917
Clyde J. Drawing	Physical Training	Dec. 11, 1917
Clyde J. Drawing	Mathematics	Dec. 11, 1917
Phoebe A. Duane	Commercial	Dec. 11, 1917
Robert S. Martin	Manual Training	Dec. 11, 1917
Hattie M. Scroggs	Art	Dec. 11, 1917
Irma Haskell	History and English (provisional)	Dec. 23, 1917
Irma Haskell	Physical Training (provisional)	Dec. 23, 1917
Severina Salmina	Commercial Law	Dec. 23, 1917
Mrs. Gertrude P. Smith	Oral Expression as part of work in English	Dec. 23, 1917
Hattie M. Scroggs	English and German	Dec. 23, 1917
Katherine Swart	Manual Training	Dec. 23, 1917
C. C. Brannon	Physical Training	Jan. 19, 1918
Mrs. Minnie Rector Kuykendall	Commercial Geography and Com. Arithmetic	Jan. 19, 1918
Lucy H. Miller	Commercial	Jan. 19, 1918
Lucy H. Miller	Cooking	Jan. 19, 1918
J. G. Moore	Commercial	Jan. 19, 1918
Mrs. Gertrude P. Smith	Music	Jan. 19, 1918
Ellsworth R. Bennett	Physics, Chemistry, General Science, Geology	Feb. 13, 1918
Anna Field	Home Economics	Feb. 13, 1918
Karl W. Mitchell	Commercial Law (provisional)	Feb. 13, 1918
Karl W. Mitchell	Commercial	Feb. 13, 1918
Kathryn R. Peckenpaugh	History	Feb. 13, 1918
Nellie M. Phillips	Music and Drawing	Feb. 13, 1918
W. C. Studdiford	Manual Training	Feb. 13, 1918
W. C. Studdiford	Spanish	Feb. 13, 1918
Hazel Ernestine Vollmer	Shorthand and Typewriting	Feb. 13, 1918
Karl Banks	Physical Training (provisional)	Mar. 6, 1918
S. J. Keusch	Physical Training (provisional)	Mar. 6, 1918
Nannie Evelyn Weed	Physical Training (provisional)	Mar. 6, 1918
W. J. Wilson	Physical Training	Mar. 6, 1918
Hazel Woods	Physical Training (provisional)	Mar. 6, 1918
Ivey Wallens Barnett	Manual Training	Mar. 30, 1918
Ruth Mary Geissler	Physical Training (provisional)	Mar. 30, 1918
Anna Mohr	Physical Training (provisional)	Mar. 30, 1918
Anna Mohr	Home Economics	Mar. 30, 1918
George A. Morgan	Commercial	Mar. 30, 1918
Anthon O. Peterson	Physical Training	Mar. 30, 1918
Anthon O. Peterson	Agriculture	Mar. 30, 1918
John H. Swan	Agriculture	Mar. 30, 1918
John H. Swan	Manual Training	Mar. 30, 1918
R. L. Waggoner	Bookkeeping and Writing (provisional)	Mar. 30, 1918
W. H. Wright	Physical Training (provisional)	Mar. 30, 1918
Christina Augusta Garvin	Kindergarten	June 1, 1918
H. G. Hunken	Radio-Buzzer Work	June 1, 1918
Mason Allen Johnston	Physical Training	June 1, 1918
Matt Kelly	Band and Orchestra Music	June 1, 1918
Rita Bhas Keyser	Kindergarten-Primary	June 1, 1918
Max W. Meharg	Typewriting	June 1, 1918
Lena A. Norris	Sewing and Cooking	June 1, 1918
Rexford W. Nutten	Manual Training	June 1, 1918
O. P. Parker	Radio-Buzzer Work	June 1, 1918
Marie Huntress Perley	Domestic Arts—Sewing and Dressmaking in elementary grades	June 1, 1918
Marie Huntress Perley	Manual Training in elementary grades	June 1, 1918

SPECIAL CERTIFICATES—Continued

<i>To whom issued</i>	<i>Subject</i>	<i>When issued</i>
June Creel	Home Economics	July 6, 1918
Merrill Jackson Burr	Physical Training	July 6, 1918
E. L. McKeown	Physical Training	Aug. 14, 1918
Isabel A. Thomson	Physical Training	Aug. 14, 1918
Louise Parker	Provisional Commercial	Aug. 14, 1918
Mabel Webb Ealand	Reissue Domestic Science	Aug. 14, 1918
Eunice Cagwin	Physical Training	Aug. 14, 1918
William A. Hendershot	Physics and Chemistry	Aug. 14, 1918
Harold W. B. Baker	Physical Training	Aug. 14, 1918
William A. Hendershot	Vocational Agriculture	Aug. 14, 1918
Hazel Ohmert	Physical Training	Sept. 25, 1918
Edna Baer	Commercial	Sept. 25, 1918
Agnes Constable	First-Year Spanish	Sept. 25, 1918
Edith Wooldrige	Commercial	Sept. 25, 1918
Jesse J. Beaty	Manual Training	Sept. 25, 1918
Jesse J. Beaty	Physical Training	Sept. 25, 1918
Irma Haskell	Household Art	Sept. 25, 1918
Irma Haskell	English	Sept. 25, 1918
Irma Haskell	Manual Training	Sept. 25, 1918
Wilma Evelyn Miles	Home Economics	Sept. 25, 1918
Percees Ernestine Sweet	Commercial	Sept. 25, 1918
Jesse R. Crandal	Commercial	Sept. 25, 1918
Maybelle Lena Hudson	Spanish	Sept. 25, 1918
Maybelle Lena Hudson	Commercial (provisional)	Sept. 25, 1918
Elsie Humphreys	Bookkeeping and Typewriting (provisional)	Sept. 25, 1918
William A. Hendershot	Algebra (provisional)	Sept. 25, 1918
Ruth Woodward Perry	Biology, Chemistry, Cookery, Housebuilding, Household Management, Sewing	Sept. 25, 1918
Mrs. H. E. Thomson	Manual Arts and Sewing (provisional)	Sept. 25, 1918
Perry H. Benson	Physical Training	Sept. 25, 1918
A. E. Anderson	Manual Training	Sept. 25, 1918
Ruth Emma Goodsell	Spanish (provisional)	Sept. 25, 1918
Pearl E. Shannon	Physical Training (provisional)	Sept. 25, 1918
Donna Dyke	Physical Training	Sept. 25, 1918
Harriet Agnes Lowrey	Commercial	Oct. 17, 1918
Zetta C. Underwood	Commercial	Oct. 17, 1918
John W. Butcher	Shorthand	Oct. 17, 1918
George T. Beach	Physical Training (provisional)	Oct. 17, 1918
Edna M. Fleming	Bookkeeping, Commercial Arithmetic	Oct. 17, 1918
Charles Henry Deane	Manual Training	Oct. 17, 1918
Charles Henry Deane	Physical Training	Oct. 17, 1918
Margaret Powers Taylor	Physical Training	Oct. 17, 1918
Elizabeth Jacobson	Commercial	Oct. 17, 1918
Paul H. Neuman	Physical Training	Oct. 17, 1918
Francis Root	Physical Training	Oct. 17, 1918
Elsie L. Humphreys	Physical Training	Oct. 17, 1918
Blanche T. Lothrop	Physical Training	Oct. 17, 1918
William A. Hendershot	Physical Training	Oct. 17, 1918
N. P. Morgan	Physical Training	Oct. 17, 1918
Mercy Nadine Shawhan	English	Oct. 17, 1918
Mercy Nadine Shawhan	Home Economics	Oct. 17, 1918
Mercy Nadine Shawhan	Physical Training	Oct. 17, 1918
Georgia Damm	Physical Training	Oct. 17, 1918
Rachel T. Whitaker	Commercial	Oct. 17, 1918
Ruth W. Perry	Physical Training (provisional)	Oct. 17, 1918
Mrs. Edith McCormack Welday	Art	Nov. 16, 1918
Josephine Larsin	Commercial	Nov. 16, 1918
L. R. Hafen	Physical Training	Nov. 16, 1918
Charles Leroy Hargrave	Agriculture	Nov. 16, 1918
Charles Leroy Hargrave	Manual Training	Nov. 16, 1918
Clara Balmat	Music (provisional)	Nov. 16, 1918
Verna R. Johannesen	Home Economics	Nov. 16, 1918
Florence Leslie Bray	Physical Training	Nov. 16, 1918
Winifred Cockrell (reissue)	Kindergarten	Sept. 25, 1918
Lewis S. Neeb (reissue)	Manual Training	Sept. 25, 1918
Bernard M. Hansen	Manual Training (reissue)	Sept. 25, 1918
J. T. Mayes (reissue)	Commercial	Sept. 25, 1918
Roy H. Cross (reissue)	Manual Training	Nov. 16, 1918

HIGH-SCHOOL LIFE DIPLOMAS

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Mrs. Martha F. Riley	Jan. 25, 1917	Cora E. Krueger	Jan. 19, 1918
Agnes Bell	Mar. 30, 1917	George E. McCracken	Mar. 6, 1918
Mrs. A. B. Lightfoot	June 9, 1917	Eunice A. Cagwin	July 6, 1918
Karl W. Mitchell	June 9, 1917	Lucy R. Brannin	July 6, 1918
Edward D. Gallagher	June 9, 1917	Lillian Eden	July 6, 1918
Hazel Ohmert	June 9, 1917	Eva May Sinn	July 6, 1918
Mrs. Minnie L. Bray	July 24, 1917	Rollie Rolanda Bell	Sept. 25, 1918
Harriet H. White	Oct. 2, 1917	Helen Chantz Haley	Oct. 17, 1918
George L. Dilworth	Dec. 29, 1917	Anna Sophia Elam	Nov. 16, 1918

ELEMENTARY-GRADE LIFE DIPLOMAS

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Agnes Bell	Mar. 30, 1917	Leila M. Colt	Dec. 29, 1917
Mrs. Robert Morse	Mar. 30, 1917	Sarah R. Marshall	Dec. 29, 1917
Laura M. Gallagher	Mar. 30, 1917	Mrs. Fannie Moon	Dec. 29, 1917
Bertha Hansel	Mar. 30, 1917	Mrs. Ethel Webster Schauer	Jan. 19, 1918
Mrs. Katherine Jensen	Mar. 30, 1917	Phyllis Burnett	Feb. 13, 1918
Cora Elsie Mabree	Mar. 30, 1917	George E. McCracken	Mar. 6, 1918
Elizabeth Mackinson	Mar. 30, 1917	Mrs. Cornelia Wasson	June 1, 1918
Nina A. Sullivan	Mar. 30, 1917	Mrs. Beulah Rager	June 1, 1918
Augusta H. Brusso	June 9, 1917	Annie E. Cahill	July 6, 1918
Clemenza E. Barber	June 9, 1917	Mollie D. Curler	July 6, 1918
Bertha Heinze	June 9, 1917	Laura Dockinson	July 6, 1918
Mrs. Dora E. Lee	June 9, 1917	Alpha Rullson	July 6, 1918
Mrs. Josephine Morton	June 9, 1917	Mary M. Sullivan	July 6, 1918
Gladys Vaughn Willis	June 9, 1917	Frankie Hill	Aug. 14, 1918
Maude Williams	June 9, 1917	Mrs. Eula Franklin McMullen	Sept. 25, 1918
Edward D. Gallagher	June 9, 1917	Eleanor Miriam Langwith	Sept. 25, 1918
Mrs. Mary B. Bray	July 24, 1917	Mrs. Eva Maxwell Mariette	Sept. 25, 1918
Viola M. Blevins	Oct. 2, 1917	Rollie Rowland Bell	Sept. 25, 1918
Mrs. Marion Hyatt Grahls	Oct. 2, 1917	Mrs. Maud Reid	Nov. 16, 1918
Elizabeth P. Smith	Oct. 2, 1917	Ada Pointer	Nov. 16, 1918
Margaret F. Shultes	Oct. 2, 1917	Anna Sophia Elam	Nov. 16, 1918
Mrs. Lila T. Welshons	Oct. 2, 1917	Mrs. Alma B. Branton	Nov. 16, 1918
Harriet H. White	Oct. 2, 1917	Mrs. Minnie L. Bray	Nov. 16, 1918
Gertrude Wise	Oct. 2, 1917		

RENEWAL OF HIGH-SCHOOL CERTIFICATES

Florence Bray	Jan. 25, 1917	Mrs. Mary T. Lowrey	June 1, 1918
Chauncey W. Smith	Jan. 25, 1917	George A. Morgan	July 6, 1918
Mrs. Lulu B. Hurley	June 9, 1917	Eunice A. Cagwin	July 6, 1918
R. L. Waggoner	June 9, 1917	Charles Leroy Brown	July 6, 1918
T. S. Hook	Oct. 2, 1917	Nash P. Morgan	Aug. 14, 1918
A. L. Kelly	Oct. 2, 1917	E. L. McKeown	Sept. 25, 1918
Bonnie O. Reid	Oct. 2, 1917	Effie M. Mack	Sept. 25, 1918
Katheryn Taylor	Oct. 2, 1917	Mrs. Harold Lubuck	Oct. 17, 1918
George C. Jensen	Dec. 11, 1917	Elmer R. Young	Oct. 17, 1918
Mrs. Ethel R. Thompson Zimmer	Jan. 19, 1918	Alice A. Brennen	Nov. 16, 1918
E. Ellsworth Smith	Feb. 13, 1918	Mrs. Katherine Williams Jurgens	Nov. 16, 1918

RENEWAL OF FIRST-GRADE ELEMENTARY CERTIFICATES

Mrs. Della W. Hoppin	Mar. 30, 1917	Mrs. Laura Lynch Isaac (provisional)	Feb. 13, 1918
Diantha Hammond	Mar. 30, 1917	A. Lena Norris	Feb. 13, 1918
Mrs. Edith R. Billings	Mar. 30, 1917	Mrs. Annette Egge Saxton (prov.)	Feb. 13, 1918
Katherine E. Swart	Mar. 30, 1917	Mrs. Artie W. Zedler (provisional)	Feb. 13, 1918
Bertha Hansel	Mar. 30, 1917	Emma DeHaven Davis	June 1, 1918
Mrs. Beulah S. Rager (provisional)	Mar. 30, 1917	Eleanor Langwith	June 1, 1918
Mrs. Etta McMullen Mariger (prov.)	Mar. 30, 1917	Mrs. Cora Watt (provisional removed)	June 1, 1918
Rachel Vann	Mar. 30, 1917	Mary M. Sullivan	July 6, 1918
Mrs. Rose M. Darrough	June 9, 1917	Mrs. Cora Tower	July 6, 1918
Zoe Ava Gould	June 9, 1917	Margaret Feily (provisional)	July 6, 1918
Lila Hafen	June 9, 1917	Mrs. Maud Reid	July 6, 1918
Helen S. Heffernan	June 9, 1917	Laura E. Mills	July 6, 1918
Bernardine Lyng	June 9, 1917	Albina Ginnocchio	July 6, 1918
Mrs. Alice DeCamp Algar	July 24, 1917	Mrs. Jessie Mitchell Hamill	Aug. 14, 1918
Mrs. Alma V. Branton	July 24, 1917	George H. Bowler	Aug. 14, 1918
Mrs. A. W. Cahlan	July 24, 1917	Ina M. Fogg	Aug. 14, 1918
Mrs. Emma Stevens Marshall	July 24, 1917	Edith Hubbard	Aug. 14, 1918
Mrs. Cora Watt (provisional)	July 24, 1917	Mrs. Helen Justina Hughes	Aug. 14, 1918
Fred L. Wood	July 24, 1917	Mrs. Alma V. Branton	Sept. 25, 1918
Annie E. Cahill	Oct. 2, 1917	Mrs. Josephine Dixon Porch	Sept. 25, 1918
Mrs. Tessie Damele (provisional)	Oct. 2, 1917	Lenore Boomhower	Sept. 25, 1918
Lillian I. Doll	Oct. 2, 1917	Mrs. Emma Bowler Welsh	Sept. 25, 1918
Mrs. Vevia Brown Eckley	Oct. 2, 1917	Mrs. Emma Brulin Benton	Sept. 25, 1918
Mrs. Marion Hyatt Grahls	Oct. 2, 1917	Mrs. Christina Schoer Hughes	Sept. 25, 1918
Mrs. Daisy D. Lucas (provisional)	Oct. 2, 1917	Laura Dickinson	Sept. 25, 1918
Henryetta Loleta Norton (provisional)	Oct. 2, 1917	Mrs. Mary Breen Shultes (prov.)	Sept. 25, 1918
Mrs. Mary H. Rogers	Oct. 2, 1917	Alice Mefley	Sept. 25, 1918
Margaret F. Shultes	Oct. 2, 1917	Emma Nevada Smith	Sept. 25, 1918
Mrs. Virginia Storrs	Oct. 2, 1917	Marie W. Lloyd	Sept. 25, 1918
Mrs. Lila T. Welshons	Oct. 2, 1917	Lottie M. Clark	Sept. 25, 1918
Gertrude Wise	Oct. 2, 1917	Mrs. Pearl G. Dominguez	Sept. 25, 1918
Fannie Daniel	Dec. 4, 1917	Mattie Richardson	Oct. 17, 1918
Mrs. P. H. Malloy	Dec. 4, 1917	Ola Gillespie	Oct. 17, 1918
Mrs. Etta McMullen Mariger	Dec. 4, 1917	Carice Smith (provisional)	Oct. 17, 1918
Mrs. Ida Mapes Sanford (provisional)	Dec. 4, 1917	Christine J. English	Nov. 16, 1918
Mollie D. Curler	Dec. 11, 1917	Katherine Swart	Nov. 16, 1918
Winona Walton Drown	Dec. 11, 1917	Delia Webb	Nov. 16, 1918
Ethel M. Graham	Dec. 11, 1917	Agnes R. Lucy	Nov. 16, 1918
Sarah R. Marshall	Dec. 11, 1917	Clara B. Plumb	Nov. 16, 1918
Mabel Kiehm	Dec. 29, 1917	Roy H. Croes	Nov. 16, 1918
Loretta S. Kenny	Jan. 19, 1918	Lizzie Mackinson	Nov. 16, 1918
Mrs. Edgar Sadler (provisional)	Jan. 19, 1918	Elsa VonDornum	Nov. 16, 1918
Phyllis Burnett	Feb. 13, 1918	Edna Sullivan	Nov. 16, 1918
Jessie Grosvenor (provisional)	Feb. 13, 1918	Mrs. Ida Fischer North	Nov. 16, 1918
Emma Hed	Feb. 13, 1918		

TEMPORARY CERTIFICATES

Issued since January 1, 1915, under the law approved March 14, 1899, and enactments in 1907, 1911, and 1913. (For the list of temporary certificates issued from January 1, 1903, to December 1, 1914, see Biennial Report of this Department for the years 1913-1914.)

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Kate Dunphy	Dec. 15, 1914	Mrs. Rachel Cottrell	Oct. 2, 1916
Rose Coughlin	Dec. 15, 1914	Agnes Roberts	Oct. 2, 1916
Allie Doris	Jan. 15, 1915	Barbara Elwell	Oct. 3, 1916
Edith Minto	Jan. 25, 1915	Esther E. Ahlbeck	Oct. 8, 1916
Hans Harthan	Jan. 25, 1915	Lucy A. Husband	Oct. 8, 1916
Ruth Vols	Feb. 3, 1915	Pearl Westlake	Oct. 8, 1916
Pearl A. Dalton	Feb. 24, 1915	S. J. Daley	Oct. 11, 1916
Bessie Webb	Feb. 24, 1915	Adah Gerjets	Oct. 11, 1916
Myrtle Bayless	June 21, 1915	Martha C. Martin	Oct. 16, 1916
R. N. Carrico	July 22, 1915	Grace M. Davis	Oct. 21, 1916
Minnie E. Savary	Sept. 15, 1915	Bertha L. Jackson	Oct. 21, 1916
E. Gertrude Bacon	Sept. 15, 1915	W. N. Rutledge	Nov. 26, 1916
Ralph R. Rice	Sept. 15, 1915	Lillie Brinley	Nov. 27, 1916
Nannie E. Weed	Sept. 15, 1915	Reva Simpson	Dec. 31, 1916
Leah Ketcham	Sept. 20, 1915	Lola Heckethorne	Dec. 31, 1916
Ida Cornell	Sept. 20, 1915	Margaret Rowley	Jan. 13, 1917
Louise Ryan	Sept. 20, 1915	Robert S. Martin	Jan. 25, 1917
Georgia H. Bentley	Sept. 22, 1915	Genevieve Murphy	Feb. 1, 1917
George L. McCreery	Sept. 22, 1915	Carolyn Neave Wilkie	Feb. 1, 1917
Mrs. Elizabeth T. Sutfin	Sept. 24, 1915	Stanley L. Smith	Feb. 1, 1917
Leora A. Spear	Sept. 22, 1915	Belle Holmes	Feb. 5, 1917
Jessie Greene	Sept. 25, 1915	Mildred D. Harding	Feb. 8, 1917
Irene M. Rogers	Sept. 25, 1915	Carrie Rufe	May 24, 1917
Iris Kopp	Sept. 25, 1915	Scott Unsworth	July 13, 1917
Elodie B. Johnson	Sept. 28, 1915	Maude McFadin	Sept. 4, 1917
Mrs. C. V. Alexander	Sept. 30, 1915	Mrs. L. P. Rasmussen	Sept. 13, 1917
Mrs. Mae Mayfield	Sept. 30, 1915	Lea Leavitt	Sept. 20, 1917
Louella Wengert	Sept. 30, 1915	Anna Malley	Sept. 20, 1917
C. H. Blake	Oct. 1, 1915	Claire J. Beach	Sept. 24, 1917
Delora Reid	Oct. 1, 1915	Devona Jensen	Sept. 25, 1917
Agnes A. Smith	Oct. 1, 1915	Zelma Mattice	Sept. 30, 1917
Pearl Boatner	Oct. 2, 1915	Susan Geer	Oct. 1, 1917
Mrs. Dora Thompson	Oct. 2, 1915	Frances Sanders	Oct. 6, 1917
Mrs. Elizabeth Rule	Oct. 2, 1915	Mrs. L. H. Reader	Oct. 10, 1917
Helen W. Robinson	Oct. 2, 1915	Madge H. Paull	Oct. 11, 1917
Myrtle Gallagher	Oct. 2, 1915	E. Lillian Moore	Oct. 19, 1917
Albert E. Welsh	Oct. 4, 1915	Margaret Heller	Oct. 19, 1917
Frances L. Hickok	Oct. 6, 1915	Mabel Canavan	Oct. 25, 1917
Tom F. Walker	Oct. 6, 1915	Martha Cox	Oct. 25, 1917
Bessie Mandeville	Oct. 7, 1915	Clara E. Balmat	Oct. 26, 1917
Ira L. Steel	Oct. 7, 1915	Theresa B. Haughney	Oct. 26, 1917
Josephine Decarli	Oct. 9, 1915	Henrietta Haywood	Oct. 26, 1917
Marienne Feour	Oct. 9, 1915	Leora Peter	Oct. 26, 1917
Norma Green	Oct. 9, 1915	Grace L. Ridgway Gill	Oct. 26, 1917
W. L. Woolf	Oct. 14, 1915	Marion F. Royce	Oct. 26, 1917
Irma Haskell	Oct. 19, 1915	Nathalie Marie Eckrem	Nov. 8, 1917
Norma Tanner	Oct. 19, 1915	Mabelle Rudesill	Nov. 8, 1917
Blanche Barnett	Oct. 20, 1915	Anna C. Salt	Nov. 8, 1917
May Bowman	Oct. 22, 1915	Dorothy Raycraft	Nov. 15, 1917
Sadie Diffendafer	Oct. 22, 1915	Vera E. Chase	Dec. 1, 1917
Margaret G. Lee	Oct. 28, 1915	Irma Haskell	Dec. 10, 1917
Mrs. Cora B. Newinger	Oct. 28, 1915	Hattie Scroggs	Dec. 10, 1917
Mrs. May L. Leavitt	Nov. 1, 1915	Helen Stimson	Dec. 10, 1917
Della McGriff	Nov. 6, 1915	Thelma Cox	Dec. 12, 1917
Ann O'Brien	Nov. 10, 1915	Corine Henley	Dec. 15, 1917
Charlotte Hodgson	Nov. 17, 1915	John H. Swan	Dec. 22, 1917
Alice E. Spencer	Nov. 17, 1915	Kathryn Peckenpaugh	Dec. 24, 1917
Clemma Marlin	Nov. 24, 1915	Lois Ruth Carter	Dec. 26, 1917
D. L. Savage	Nov. 24, 1915	Irene Snow	Jan. 26, 1918
Ruth Byrkit	Dec. 10, 1915	Hester Mills	Jan. 31, 1918
Paul A. Grafton	Dec. 10, 1915	Miss L. R. Rogers	Feb. 3, 1918
Mary L. Ferguson	Dec. 10, 1915	Clarisse Scott	Feb. 11, 1918
Mrs. Lyda E. McGowan	Dec. 10, 1915	Thelma W. Trevellick	Feb. 11, 1918
Mary B. Keirce	Dec. 14, 1915	Rose Georgian	Feb. 12, 1918
Claire Heald	Dec. 18, 1915	Miss Florace Shamin	Mar. 1, 1918
Wanda Ball	Jan. 4, 1916	W. J. Wilson	Mar. 30, 1918
Margaret Hazlett	Jan. 15, 1916	Dr. L. H. Hartman	Apr. 22, 1918
Mabel Diffendarfer	Jan. 15, 1916	J. A. Nysewander	Apr. 22, 1918
Alice M. Slinkard	Jan. 17, 1916	Ora Lee Risk	Apr. 22, 1918
Helen D. Haynes	Mar. 25, 1916	Mrs. Ruby Gilkey	May 10, 1918
Stella Hibbard	May 22, 1916	Bert Mills	May 21, 1918
Eileen E. Everett	Sept. 5, 1916	Cecelia Franklin	Mar. 1, 1918
Earl V. Hawley	Sept. 5, 1916	Mrs. Drucie Crase	June 2, 1918
Bertha Knox	Sept. 9, 1916	Ellen Marie Johnson	Sept. 13, 1918
Wanda L. Hawkes	Sept. 26, 1916	Elsie M. Walker	Sept. 10, 1918
Emeline Reilly	Sept. 26, 1916	Mrs. Myrtle B. Knight	Sept. 14, 1918
Minnie Wolf	Oct. 2, 1916	Miss Ida M. Bowen	Sept. 14, 1918
Ralph M. Rich	Oct. 2, 1916	Mrs. Mary Lippincott	Sept. 14, 1918
Mrs. Julia M. Middleton	Oct. 2, 1916	Dorris H. Ewell	Sept. 8, 1918
S. D. Melton	Oct. 2, 1916	Frances Heward	Sept. 20, 1918

TEMPORARY CERTIFICATES—*Continued*

<i>To whom issued</i>	<i>When issued</i>	<i>To whom issued</i>	<i>When issued</i>
Pauline Jacques.....	Sept. 21, 1918	Sara E. Halpin.....	Oct. 7, 1918
Mrs. Laura Frazier.....	Sept. 14, 1918	Mrs. Myrtle S. Elsberry.....	Oct. 30, 1918
Elsie Shipp.....	Sept. 25, 1918	Zella Prouty.....	Nov. 18, 1918
Eva Bostwick Torrence.....	Sept. 21, 1918	Edith Rowen (Mrs. E. R. Oldman).....	Dec. 23, 1918
Mrs. Marie E. Johnson.....	Oct. 18, 1918	Lucy Ford (Mrs. G. A. Foster).....	Dec. 23, 1918
Gertrude Edwards.....	Sept. 30, 1918	Fanny Ruthuford Stanton.....	Dec. 30, 1918
Caroline O. Smith.....	Oct. 15, 1918	Lily Fields.....	Dec. 30, 1918
Nellie Stapleton.....	Oct. 20, 1918	Mrs. Marion P. Borgen.....	Dec. 30, 1918
Bell Hamblin.....	Nov. 1, 1918	Mary Louisa Brokaw.....	
Lillie M. Williams.....	Nov. 1, 1918	Mrs. Rosa V. Ewing.....	Oct. 10, 1918
Ruby Grosse.....	Sept. 30, 1918		

EDUCATIONAL STATISTICS

From Reports of School Census Marshals, Teachers, Trustees and Deputy Superintendents

TABLE NO. 1

Showing number of Census Children in each County and Supervision District for the year 1917

County	Boys	Girls	Total	District totals
Elko	782	751	1,533	First District.....1,533
Eureka	108	137	245	
Lander	158	132	290	
White Pine	768	682	1,450	Second District.....1,985
Churchill	436	370	806	
Humboldt	561	505	1,066	Third District.....1,872
Douglas	189	141	330	
Lyon	414	401	815	Fourth District.....5,877
Mineral	115	118	233	
Ormsby	364	277	641	
Storey	166	190	356	
Washoe	1,862	1,680	3,542	
Clark	481	468	949	Fifth District.....3,211
Esmeralda	316	299	615	
Lincoln	309	244	553	
Nye	549	545	1,094	
Totals	7,568	6,920	14,478	14,478

TABLE NO. 2

Showing number of Census Children in each County and Supervision District for the year 1918

County	Boys	Girls	Total	District totals
Elko	768	781	1,489	First District.....1,489
Eureka	113	127	240	
Lander	157	149	306	
White Pine	838	769	1,607	Second District.....2,153
Churchill	470	443	913	
Humboldt	568	484	1,052	Third District.....1,965
Douglas	156	137	293	
Lyon	424	412	836	Fourth District.....5,705
Mineral	95	88	183	
Ormsby	352	300	652	
Storey	165	179	344	
Washoe	1,784	1,613	3,397	
Clark	490	506	996	Fifth District.....3,129
Esmeralda	279	261	540	
Lincoln	300	257	557	
Nye	507	529	1,036	
Totals	7,456	6,985	14,441	14,441

TABLE NO. 3
Statistics from return of School Census Marshals for year ending June 30, 1917

Counties	Churchill	Clark	Clark	Dallas	Elko	Elko	Esmeralda	Humoldt	Lincoln	Lyon	Mesa	Nye	Ormsby	Storey	Washoe	White Pine	Totals
Total number of children under 21 years of age	1,370	1,594	1,536	2,622	1,067	882	1,382	643	10,473	39,875	233	1,403	1,507	1,756	5,315	2,662	23,382
Number of children under 21 born in foreign countries	32	138	12	113	8	8	1,848	60	10	233	39	18	18	11	12	112	817
Number of children under 21 born in other states or territories	640	768	768	1,071	113	8	1,457	102	102	583	233	231	231	143	59	1,323	8,967
Number of children under 21 born in Nevada	698	784	766	1,438	1,457	325	325	643	361	872	872	231	231	597	446	1,227	13,568
Number of Indian children under 21 years of age	5	1	1	22	22	19	19	19	39	0	0	5	55	55	0	0	259
Number of Mongolian children under 21 years of age	0	0	0	17	17	0	0	0	0	0	0	0	10	12	0	0	71
Number of Negro children under 21 years of age	0	0	0	257	19	0	1,908	9	10	424	0	0	4	0	18	2	259
Number of white children under 21 years of age	1,365	1,581	1,534	2,582	1,032	863	1,363	634	10,434	39,870	233	1,402	1,441	1,756	5,315	2,618	22,960
Number of children between 18 and 21 years of age	98	115	58	228	80	81	1,808	128	53	424	92	15	103	35	34	127	1,636
Number of children under 6 years of age	466	518	568	860	372	105	1,065	654	150	257	209	310	310	80	126	1,065	7,268
Total number of children between 6 and 18 years of age	906	949	949	1,583	615	245	1,065	1,065	290	563	815	233	1,094	277	355	8,522	14,478
Number of girls between 6 and 18 years of age	370	468	441	751	294	137	505	505	132	244	401	115	118	545	277	641	6,920
Number of boys between 6 and 18 years of age	436	481	508	832	315	108	560	560	158	319	414	115	118	545	277	641	7,558
Number of blind, irrespective of age	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	5
Number of deaf and dumb, irrespective of age	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	15
Number of children between 8 and 16 years not attending any school	18	21	23	87	10	18	18	18	0	12	0	25	0	12	0	28	494
Number of children between 8 and 16 years attending private schools	10	2	10	23	10	10	10	7	10	5	5	5	10	37	12	41	216
Number of children between 8 and 16 years attending public schools	525	657	208	1,020	142	108	1,053	1,053	204	382	112	528	83	410	344	1,662	9,066
Number of children between 6 and 18 years not attending any school	74	106	92	226	10	38	108	108	46	70	112	528	112	60	19	362	1,660
Total number of children reported as attending private schools	17	6	30	30	17	20	222	20	282	8	9	9	19	37	136	53	380
Total number of children reported as attending public schools	740	915	287	1,313	540	989	1,053	1,053	204	382	112	528	1,032	473	3,198	1,801	12,762
No. of children between 4 and 6 yrs. attending public kindergartens	10	38	0	0	0	30	30	0	0	18	0	68	177	60	71	13	238
Number of children between 4 and 6 years attending public schools	6	9	4	22	6	16	16	11	2	20	20	50	32	2	10	13	196
Number of children between 4 and 6 years of age	152	225	47	346	144	34	34	38	102	187	85	185	177	60	80	231	2,664

TABLE NO 4
Statistics from returns of Teachers and Trustees for year ending June 30, 1917

Counties														
	Number of volumes in school libraries.....	Number of school visits by other persons.....	Number of visits made by school trustees.....	Teachers who have made reports according to law.....	Number of teachers who attended state or district institutes.....	Number of teachers attending summer school during school year.....	Number of teachers who attended county teachers' institutes.....	Average monthly salary paid to the teachers.....	Average duration of the school in months (of four weeks).....	Number of Indian children attending public school.....	Number attending school between 4 and 6 years of age.....	Average daily attendance.....	Average number belonging.....	Total number of pupils enrolled on public school register.....
Churchill	3,290	398	83	34	6	3	6	\$116.73	8.6	1	38	600.9	638.6	962
Clark	1,229	436	161	45	11	12	11	114.11	8.2	1	6	568.0	606.0	830
Douglas	1,562	136	46	16	0	0	0	121.50	8.3	1	1	247.0	299.0	307
Elko	12,262	904	180	101	63	20	25	102.70	8.7	34	29	1,118.1	1,168.0	1,468
Esmeralda	4,476	116	23	23	25	10	25	149.45	9.07	66	66	576.0	666.0	710
Eureka	1,684	180	42	20	8.3	8.3	8.3	88.52	8.3	14	10	211.5	218.1	240
Humboldt	9,211	623	101	67	1	1	1	117.32	8.4	7	7	507.7	562.1	1,190
Lander	2,311	123	24	16	10	19	82	109.32	7.9	82	8	386.2	386.8	267
Lincoln	2,768	276	37	34	1	0	0	95.72	7.7	9	87	590.0	407.0	519
Lyon	3,586	930	106	40	16	6	6	117.50	9.0	2	2	642.0	642.0	840
Mineral	2,561	193	83	15	1	1	1	107.50	8	8	78	343.0	389.0	210
Nye	3,323	716	267	57	17	10	17	127.79	7.9	34	78	844.0	839.0	1,134
Ormsby	2,867	113	11	15	0	0	0	127.50	10.0	0	0	276.0	296.0	469
Storey	2,468	136	12	11	1	1	1	125.50	9.6	2	2	276.0	296.0	327
Washoe	5,416	235	120	120	17	21	21	150.00	8.0	1	1	2,690.0	2,690.0	3,663
White Pine	4,662	1,015	56	67	17	18	18	120.50	8.1	83	28	1,126.5	1,171.9	1,445
Totals	66,434	7,579	1,401	681	265	131	127	\$116.29	8.5	162	325	10,765.9	11,320.5	14,661
														7,511
														7,080

TABLE NO. 5
Statistics from returns of Teachers and Trustees for year ending June 30, 1917

Counties	Number of inspections made by the Deputy Superintendent	Number of districts which have voted a district tax	Valuation of schoolhouses and furniture	Valuation of school libraries	Valuation of school apparatus	Number of teachers who subscribe for an educational journal	Longest time teachers have taught the same school (months)	No. of teachers who have taught in same district 2 years and over	Total valuation of school property
Churchill	34	3	\$61,850.00	\$2,003.00	\$2,890.00	27	46	11	\$69,471.00
Clark	33	6	118,375.00	1,735.00	4,895.00	46	51	17	122,779.00
Douglas	13	3	22,500.00	1,010.00	2,490.00	15	109	8	28,708.00
Elko	120	12	181,650.00	6,350.00	17,071.00	88	170	36	209,441.00
Esmeralda	6	6	110,350.00	3,413.00	2,045.00	25	68	11	117,368.00
Eureka	32	1	14,089.00	925.00	1,767.00	19	60	9	17,545.00
Humboldt	48	3	145,845.00	5,212.00	8,115.00	61	128	37	163,094.00
Lander	33	1	29,206.00	2,436.00	1,135.00	13	98	4	33,521.00
Lincoln	27	3	51,568.00	1,692.00	2,760.00	31	58	14	57,609.00
Lyon	40	16	94,000.00	3,441.00	4,850.00	39	50	17	103,409.00
Mineral	24	0	12,592.00	1,676.00	1,628.00	15	76	3	17,679.00
Nye	21	3	105,280.00	1,916.00	5,318.00	56	126	21	115,728.00
Ormsby	6	4	42,800.00	1,895.00	1,045.00	9	210	7	45,495.00
Storey	6	0	30,000.00	1,895.00	1,625.00	10	368	7	33,817.00
Washoe	67	13	524,112.00	5,580.00	15,143.00	50	257	70	548,292.00
White Pine	127	0	110,847.00	4,174.00	4,871.00	58	60	13	224,008.00
Totals	637	73	\$1,650,511.00	\$45,090.00	\$77,648.00	562	285	285	\$1,905,917.00

TABLE NO. 6
Miscellaneous Statistics for 1917. Each building having elementary grades is classed as an elementary school

	In First Supervision District	In Second Supervision District	In Third Supervision District	In Fourth Supervision District	In Fifth Supervision District	Totals
Whole number of elementary schools.....	63	59	58	96	73	349
Whole number of district high schools.....	2	2	0	7	3	26
Whole number of county high schools.....	2	6	3	11	6	38
Total number of schools.....	67	67	61	114	82	365
Total number of school districts.....	73	59	57	107	79	352
Schoolhouses built of brick.....	1	3	6	0	3	26
Schoolhouses built of adobe.....	1	4	4	0	6	14
Schoolhouses built of wood.....	56	53	43	85	58	306
Schoolhouses built of stone or cement.....	2	1	2	6	4	15
Schoolhouses rented.....	2	0	2	7	4	20
Schoolhouses unfit for use.....	4	0	10	0	23	37
New schoolhouses erected.....	1	2	0	3	2	10
Male teachers.....	15	12	18	27	23	100
Female teachers.....	88	91	83	190	132	594
Total number of teachers.....	103	103	101	217	160	694
Average monthly salary paid to male teachers.....	\$117.83	\$125.33	\$134.10	\$146.00	\$159.87	\$136.82
Average monthly salary paid to female teachers.....	\$87.57	\$86.90	\$101.13	\$89.00	\$96.06	\$92.13
Schools maintained less than six months.....	2	4	0	1	0	11
Schools maintained six months.....	4	1	3	9	10	114
Schools maintained more than six and less than eight months.....	6	8	6	5	8	33
Schools maintained eight months and over.....	50	12	46	80	50	238
Schools maintained nine months and over.....	40	14	30	58	24	166
Schools maintained ten months.....	14	12	7	29	5	67
Average number of months of all schools in each county.....	Elko.....8.78	Eureka.....8.3 Lander.....7.9 White Pine.....8.1	Churchill.....8.6 Humboldt.....8.4	Douglas.....8.3 Lyon.....9 Mineral.....9 Ormsby.....10 Storey.....9.6 Washoe.....8	Clark.....8.2 Esmeralda.....9.07 Lincoln.....7.7 Nye.....7.9	
Teachers who have made reports according to law.....	101	102	101	217	159	690
Teachers who have failed to make such reports.....	2	1	0	0	1	4
Amount of money expended for county institutes.....	0	0	\$133.20	0	0	\$133.20
Salary of Deputy Superintendents.....	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$10,000.00
Number of school visits made by Deputy Superintendents.....	120	113	82	156	87	558
Number of districts having had special tax.....	12	2	6	28	17	63

NOTE—The above figures are from data furnished by the Deputy Superintendents.

TABLE NO. 8
Statistics from returns of Teachers and Trustees for year ending June 30, 1918

Counties	Whole number of boys enrolled on public school register	Whole number of girls enrolled on public school register	Whole number of pupils enrolled on public school register	Average number belonging	Average daily attendance	Number attending school between 4 and 6 years of age	Number of Indian children attending public school	Average duration of the school in months (of four weeks)	Average monthly salary paid to the teachers	Number of teachers who attended summer school in school year	Number of teachers who attended county institute	Number of teachers who attended state and district institutes
Churchill	472	444	916	710.4	668.5	36	2	7.8	111.32	8	0	0
Clark	501	553	1,054	818.0	761.0	67	1	8.2	147.48	8	0	0
Douglas	169	141	300	287.8	254.0	2	1	8.6	131.93	1	0	0
Elko	795	774	1,569	1,119.1	1,045.9	23	27	8.8	115.90	17	2	0
Esmeralda	282	334	616	426.0	399.0	9	8	9.1	179.50	9	0	0
Eureka	113	138	256	208.9	191.7	11	14	8.7	183.47	4	0	0
Humboldt	607	591	1,198	848.6	808.2	98	31	8.0	110.39	15	0	0
Lander	135	133	268	217.2	199.2	0	42	8.9	109.53	2	0	0
Lincoln	249	214	463	342.0	323.0	5	0	8.3	139.70	9	1	0
Lyon	411	388	799	623.0	584.2	11	0	8.3	124.33	10	0	0
Mineral	102	108	210	146.6	136.8	2	2	8.6	126.66	1	0	0
Nye	489	477	966	691.0	670.0	86	31	8.1	134.66	13	0	0
Ormsby	256	247	503	400.3	386.2	0	7	10.0	110.09	4	0	0
Storey	123	151	274	252.8	240.5	2	0	9.2	136.55	1	0	0
Washoe	1,829	1,725	3,554	2,788.8	2,590.0	11	2	8.3	133.18	20	1	0
White Pine	884	788	1,672	1,200.4	1,167.6	27	15	8.0	126.96	10	0	0
Totals	7,362	7,156	14,518	11,009.9	10,429.7	396	183	8.5	129.13	132	4	0

TABLE NO. 9
Statistics from returns of Teachers and Trustees for year ending June 30, 1918

Counties	Number of districts which have voted a district tax	Total valuation of school property	Valuation of school apparatus	Valuation of schoolhouses and furniture	Valuation of school libraries	Number of volumes in the school libraries	Number of school visits by other persons	Number of inspections made by the Deputy Superintendent	Number of visits made by School Trustees	Number of teachers who subscribe for an educational journal	Number of teachers who have taught the same school 2 years and over	Longest time any teacher has taught the same school (months)
Churchill	1	\$188,237.00	\$10,085.00	\$167,183.00	\$2,850.00	4,670	399	58	109	31	10	56
Clark	8	159,555.00	4,725.00	148,450.00	2,438.00	3,079	339	24	42	40	17	43
Douglas	3	70,140.00	3,440.00	63,900.00	2,006.00	3,173	172	38	88	18	4	117
Elko	9	423,190.00	20,664.00	389,865.00	7,862.00	12,597	746	182	200	101	36	190
Emeralda	5	103,313.00	1,280.00	96,875.00	3,450.00	4,325	178	4	36	18	10	68
Eureka		22,697.00	780.00	19,690.00	1,228.00	2,078	211	36	63	16	7	70
Humboldt	3	196,669.00	10,134.00	173,684.00	6,867.00	9,414	635	84	146	67	28	136
Lander		35,970.00	920.00	32,260.00	1,663.00	1,196	88	30	17	16	4	16
Lincoln	4	63,828.00	3,097.00	56,063.00	2,400.00	3,016	390	16	44	35	9	96
Lyon		126,622.00	6,975.00	113,890.00	4,297.00	6,823	494	42	69	50	16	70
Mineral	2	20,795.00	2,480.00	14,390.00	2,477.00	3,051	87	16	43	15	3	65
Nye	3	131,880.00	6,084.00	117,275.00	3,244.00	4,063	560	28	106	24	24	130
Ormsby		46,286.00	1,745.00	42,800.00	1,732.00	1,881	164	16	10	15	10	220
Storey	5	33,955.00	1,900.00	30,000.00	1,240.00	1,776	63	10	24	9	3	263
Washoe	6	686,928.00	15,365.00	641,176.00	6,827.00	8,432	2,070	53	353	100	79	266
White Pine	10	134,222.00	6,112.00	118,020.00	4,367.00	7,642	737	157	113	63	23	90
Totals	55	\$2,419,645.00	\$93,793.00	\$2,224,891.00	53,583	74,706	7,358	780	1,408	640	286	

TABLE NO. 10
Miscellaneous Statistics for 1918. Each building having elementary grades is classed as an elementary school

	In First Supervision District	In Second Supervision District	In Third Supervision District	In Fourth Supervision District	In Fifth Supervision District	Totals
Whole number of elementary schools.....	67	68	61	99	83	378
Whole number of district high schools.....	9	3	0	10	3	25
Whole number of county high schools.....	2	2	3	3	4	14
Whole number of high schools.....	11	5	3	13	7	41
Total number of schools.....	69	63	63	112	89	396
Schoolhouses built of brick.....	80	58	62	75	88	363
Schoolhouses built of wood.....	7	4	10	8	0	29
Schoolhouses built of adobe.....	60	53	53	85	61	312
Schoolhouses built of stone or cement.....	1	1	3	0	3	8
Schoolhouses rented.....	2	2	0	9	16	29
Schoolhouses unit for use.....	1	0	8	6	15	20
New schoolhouses erected.....	2	0	0	2	1	18
Male teachers.....	5	3	4	6	1	20
Female teachers.....	14	11	18	24	24	91
Total number of teachers.....	100	103	133	210	138	644
Average monthly salary paid to male teachers.....	114	111	111	132	132	735
Average monthly salary paid to female teachers.....	\$137.57	\$155.90	\$136.68	\$162.39	\$186.47	\$153.60
Schools maintained less than six months.....	\$59.23	\$50.77	\$55.04	\$62.86	\$116.19	\$137.61
Schools maintained six months.....	2	10	4	1	1	12
Schools maintained more than six and less than eight months.....	2	2	4	4	4	24
Schools maintained eight months and over.....	61	46	21	10	10	33
Schools maintained ten months.....	47	28	15	72	57	257
Schools maintained ten months.....	15	14	12	15	30	172
Average number of months of all schools in each county.....	Elko.....8.8	Eureka.....8.7 Lander.....8.9 White Pine.....8.02	Churchill.....7.88 Humboldt.....8.04	Douglas.....8.6 Lyons.....8.3 Mina.....8.5 Ormsby.....10.0 Storey.....9.2 Washoe.....8.3	Clark.....8.2 Esmeralda.....9.14 Lincoln.....8.31 Nye.....8.14	61
Teachers who have made reports according to law.....	110	106	110	226	153	705
Teachers who have failed to make such reports.....	4	8	1	8	9	30
Amount of money expended for county institutes.....	0	0	0	0	0	0
Salary of Deputy Superintendents.....	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$10,000.00
Number of school visits made by Deputy Superintendents.....	182	216	142	162	72	774
Number of districts having had special tax.....	9	26	4	13	19	71

NOTE—The above figures are from data furnished by the Deputy Superintendents.

FINANCIAL STATISTICS

TABLE A

Showing the number of children between 6 and 18 years of age, and the annual apportionments of the state school moneys to the several counties in the State since its admission

Year	Number of boys	Number of girls	Total number of children	State apportionment to counties
1865	1,289	1,312	2,601	\$5,075.72
1866	1,306	1,253	2,559	7,980.95
1867	1,352	1,429	2,781	8,806.97
1868	1,729	1,664	3,393	13,440.61
1869	1,735	1,888	3,623	14,734.63
1870	2,068	1,884	3,952	16,975.59
1871	2,152	2,257	4,409	17,823.70
1872	2,529	2,421	4,950	22,613.74
1873	2,869	2,816	5,685	25,669.90
1874	3,121	3,194	6,315	30,510.89
1875	3,796	3,742	7,538	36,783.65
1876	4,383	4,092	8,475	44,154.27
1877	4,761	4,603	9,364	45,312.28
1878	5,055	4,867	9,922	49,670.33
1879	5,240	5,065	10,305	40,653.81
1880	5,223	5,369	10,592	38,325.75
1881	5,198	5,385	10,583	42,861.42
1882	5,039	5,444	10,483	55,162.94
1883	4,965	4,935	9,900	47,650.60
1884	4,089	3,809	7,898	52,955.86
1885	4,587	4,697	9,284	56,320.99
1886	4,658	4,662	9,320	56,406.06
1887	4,890	4,938	9,828	53,682.37
1888	4,852	4,864	9,716	56,191.24
1889	4,919	4,870	9,789	56,842.68
1890	4,951	5,071	10,022	59,722.18
1891	4,924	4,831	9,755	99,825.00
1892	4,908	4,775	9,686	94,997.00
1893	4,837	4,617	9,454	108,897.00
1894	4,797	4,623	9,420	109,918.59
1895	4,896	4,589	9,485	109,786.58
1896	4,625	4,464	9,089	118,284.85
1897	4,688	4,411	9,099	125,431.99
1898	4,535	4,461	8,996	119,539.45
1899	4,531	4,495	9,026	119,844.88
1900	4,594	4,481	9,075	125,339.82
1901	4,688	4,442	9,130	126,906.21
1902	4,784	4,493	9,277	131,442.87
1903	4,673	4,478	9,151	136,106.21
1904	4,851	4,579	9,430	135,305.31
1905	5,069	4,855	9,924	139,631.66
1906	5,730	5,507	11,237	144,036.86
1907	6,673	6,392	13,065	159,267.85
1908	6,164	5,863	12,027	241,663.27
1909	6,442	5,903	12,325	248,677.87
1910	6,375	6,060	12,319	208,668.73
1911	6,441	5,940	12,381	214,330.15
1912	6,511	6,010	12,521	217,514.62
1913	6,812	6,263	13,075	233,602.23
1914	7,016	6,505	13,521	216,957.61
1915	7,194	6,784	13,928	213,095.51
1916	7,253	6,858	14,111	234,829.10
1917	7,558	6,920	14,478	269,230.66
1918	7,466	6,985	14,441	292,902.54

NOTE—The apparent decrease in 1908 is misleading. The school census that year, under state supervision and investigation, showed that preceding censuses, in many districts, had been excessive. There was no real decrease in 1908.

TABLE B
Showing receipts of the several county school funds for the year ending June 30, 1917

Counties	Balance on hand at beginning of school year	Amount received from state apportionment	Amount received from county tax	Amount received from district tax	Amount received from all other sources	Total income
Churchill	\$4,152.09	\$12,888.96	\$14,181.04	\$3,235.93	\$1,604.23	\$36,014.30
Clark	5,488.74	14,672.25	19,649.13	9,409.48	1,113.16	50,332.76
Douglas	1,749.39	6,880.74	4,718.12	839.62	549.65	13,787.52
Elko	26,804.54	32,486.13	67,821.66	14,744.37	3,225.95	144,782.64
Esmeralda (no report)						
Eureka	1,711.80	6,206.10	10,351.86	410.74	615.00	19,296.50
Humboldt	10,743.22	21,606.50	39,417.06	756.84	2,381.77	74,906.41
Lander	5,712.27	6,158.15	17,602.87			29,473.29
Lincoln	2,375.22	11,237.12	15,330.33	1,898.97	32.13	30,578.77
Lyon	3,300.21	26,645.88	14,045.24	5,698.40	1,416.12	61,106.35
Mineral	6,243.12	4,328.23	12,300.14		100.01	22,971.50
Nye	5,819.99	18,669.72	27,920.09	38,844.05	2.22	91,256.07
Ormsby	2,621.24	10,965.92	7,175.83	4,866.39	6,135.00	31,871.46
Storey	194.54	5,843.45	9,147.70		368.08	15,568.77
Washoe (no report)						
White Pine	6,680.23	23,845.35	32,791.08	13,470.31	4,323.34	81,015.36
Totals (excluding Esmeralda and Washoe Counties)	\$93,496.65	\$301,889.00	\$392,156.26	\$82,675.10	\$21,876.71	\$692,093.72

NOTE—Above data taken from annual reports of County Treasurers.

TABLE C
Showing expenditures of the several county school funds for the year ending June 30, 1917

Counties	For teachers' salaries	For sites, repairs, building, etc.	For libraries	For contingent expenses	Total expenditures	Balance on hand at close of the school year	Indebtedness at close of school year
Churchill	\$21,562.91		\$228.07	\$10,111.96	\$31,902.94	*\$4,924.58	
Clark	28,270.67	\$4,826.84	188.69	10,168.99	43,454.19	7,060.57	\$2,738.97
Douglas	8,134.76	842.93	124.31	1,889.49	10,941.49	2,877.88	112.50
Elko	76,839.14	11,109.29	622.60	27,442.55	115,013.58	27,670.11	16,823.18
Esmeralda (no report)							
Eureka	12,249.10	636.75	108.17	2,056.78	15,049.80	8,920.08	
Humboldt	49,539.70	3,123.70	460.77	13,863.23	66,986.40	8,223.71	
Lander	13,890.76	1,986.83	44.79	3,237.56	19,258.93	10,239.16	
Lincoln	20,048.43		147.96	5,659.72	25,856.11	4,683.86	
Lyon	25,220.66		203.05	7,467.97	32,891.68	4,853.43	943.01
Mineral	12,101.50	3,734.03	23.49	3,825.14	19,233.16	3,804.14	
Nye	31,552.62	2,472.15	274.84	23,714.09	58,013.60	16,176.23	
Ormsby	12,940.00	369.58	132.08	+14,155.14	27,616.80	3,779.18	6,000.00
Storey	10,422.84	498.60	81.09	7,661.69	18,664.22	762.72	766.00
Washoe (no report)							
White Pine	51,669.20	2,239.45	360.75	13,947.98	68,217.38	13,082.06	
Totals	\$373,472.18	\$31,943.15	\$3,025.66	\$144,711.29	\$553,152.28	\$110,622.18	\$27,079.61

*This balance does not exhibit overdraft of \$625.12.

†Includes refund of \$10,037.21 interest-bearing warrants.

NOTE—Above data taken from annual reports of the County Treasurers.

TABLE D
Showing receipts of the several county funds for the year ending June 30, 1918

Counties	Balance on hand at beginning of school year	Amount received from state apportionment	Amount received from county tax	Amount received from district tax	Amount received from all other sources	Total income
Churchill	\$4,924.58	\$14,164.00	\$14,614.54	\$5,330.82	\$465.27	\$39,499.01
Clark	7,060.67	15,208.01	21,749.24	13,617.01	---	57,634.83
Douglas	2,877.83	6,068.65	6,029.87	1,716.57	699.74	17,392.66
Elko	26,991.48	32,596.00	72,667.42	20,628.31	4,203.06	156,986.27
Emeraldia (no report)	---	---	---	---	---	---
Eureka	3,920.08	6,526.84	10,977.25	---	327.61	21,751.78
Humboldt	8,223.71	23,663.15	37,896.77	1,978.24	2,553.60	74,319.47
Lander	10,299.16	6,101.64	15,488.71	4,359.03	264.43	36,512.97
Lincoln (no report)	---	---	---	---	---	---
Lyon	3,196.85	15,699.16	15,267.87	4,368.24	---	38,532.12
Mineral	3,804.14	4,989.33	12,734.14	1,500.00	---	23,027.61
Nye	15,176.23	22,191.30	41,861.46	28,659.50	---	107,888.49
Ormsby	6,924.06	14,636.57	7,080.99	4,159.17	331.49	33,132.27
Storey	752.72	5,269.28	8,002.78	---	8,000.00	22,024.78
Washoe	22,507.00	54,286.07	61,225.89	43,994.32	75.28	182,068.56
White Pine	13,092.08	26,072.24	27,679.43	18,611.38	1,961.35	87,416.48
Totals	\$129,750.48	\$247,461.24	\$353,275.36	\$148,822.39	\$18,896.83	\$896,186.30

NOTE—Above data taken from annual reports of County Treasurers.

TABLE E
Showing expenditures of the several county funds for the year ending June 30, 1918

Counties	For teachers' salaries	For sites, repairs, buildings, etc.	For libraries	For contingent expenses	Total expenditure	Balance on hand at close of school year	Indebtedness at close of school year
Churchill	\$21,929.87	\$2,635.20	\$164.23	\$10,350.02	\$35,139.32	\$3,914.77	\$849.90
Clark	27,948.01	4,898.87	142.23	12,556.07	45,544.98	12,300.91	-----
Douglas	9,174.86	1,690.80	87.75	4,127.28	15,080.80	2,402.86	-----
Elko	87,110.55	8,217.23	483.53	23,801.04	124,422.35	33,076.32	8,905.45
Esmeralda (no report)	-----	-----	-----	-----	-----	-----	-----
Eureka	12,727.77	692.52	78.28	2,280.41	15,778.98	5,582.09	-----
Humboldt	53,137.30	2,406.00	287.15	11,318.72	67,159.18	7,505.49	-----
Lander	13,945.50	1,039.10	43.64	5,796.18	20,824.42	13,459.72	-----
Lincoln (no report)	-----	-----	-----	-----	-----	-----	-----
Lyon	24,274.04	-----	108.10	7,963.28	32,345.42	6,398.10	-----
Mineral	12,342.82	-----	32.48	6,191.00	18,566.30	4,550.01	-----
Nye	55,311.63	1,545.84	204.87	23,871.11	80,733.45	27,438.64	-----
Ormsby	16,536.91	3,017.74	110.01	9,119.05	28,783.71	4,472.46	-----
Storey	8,737.44	970.83	94.88	3,941.82	13,746.02	424.80	1,021.73
Washoe	114,181.68	5,724.69	859.81	44,453.82	166,199.40	17,581.41	(+)
White Pine	52,026.41	4,403.18	497.61	17,984.78	74,911.98	12,848.10	5,525.23
Totals	\$509,364.79	\$37,291.60	\$3,184.64	\$188,368.98	\$738,206.01	\$151,898.58	\$16,102.31

NOTE—Above data taken from annual reports of County Treasurers.

*Not segregated. †No record.

TABLE F
Showing investment of State Permanent School Fund, 1917
 (As reported by State Controller)

Bonds	Interest rate	Year acquired	Par value	Book value	Held by			
					State Permanent School Fund	Irreducible University Fund	University 90,000-Acre Grant Fund	Public School Teachers' Permanent Fund
United States Liberty Loan.....	4½	1917	\$20,000.00	\$20,000.00	\$9,000.00			\$11,000.00
Nevada Contingent Emergency.....	5½	1917	8,000.00	8,000.00	8,000.00			
Nevada General Appropriation.....	5½	1917	22,500.00	22,500.00	20,000.00			
Nevada University Experiment Farm.....	5½	1917	43,000.00	43,000.00	42,000.00	\$1,500.00	\$1,000.00	
Nevada University Agricultural Building.....	5½	1917	32,000.00	32,000.00	32,000.00			
Nevada Irredeemable School.....	5½	1879	380,000.00	380,000.00	380,000.00			
Nevada Refunding.....	5½	1913	250,000.00	250,000.00	195,000.00		39,000.00	
California.....	4½	1914	232,000.00	232,000.00	232,000.00			
Idaho.....	4½	1914	175,000.00	175,000.00	175,000.00			
Massachusetts.....	3½	1908-1908	682,000.00	682,000.00	645,000.00		18,500.00	
New Mexico.....	5½	1914	125,000.00	125,000.00	125,000.00			
Churchill County.....	5½	1914	5,000.00	5,000.00	5,000.00			
Clark County.....	6½	1914	66,000.00	66,000.00	66,000.00			
Elko County Dormitory.....	6½	1917	52,500.00	52,500.00	52,500.00			
Elko County High School.....	6½	1917	106,803.00	106,803.00	106,803.00			
Emeralda County.....	5½	1917	20,000.00	20,000.00	20,000.00			
Emeralda County.....	5½	1914	15,000.00	15,000.00	15,000.00			
Humboldt County.....	5½	1917	70,000.00	70,000.00	70,000.00			
Lincoln County.....	4½	1916	428,000.00	396,761.00	325,312.98	13,554.71	47,893.30	
White Pine County.....	5½	1915	20,000.00	20,000.00	20,000.00			
White Pine County.....	6½	1915-1917	17,400.00	17,400.00	17,400.00			
Totals.....			\$2,763,400.00	\$2,732,779.76	\$2,564,831.75	\$49,554.71	\$107,393.30	\$11,000.00

TABLE G
Showing investment of State Permanent School Fund, 1918
 (As reported by State Controller)

Bonds	Interest rate	Year acquired	Par value	Book value	Held by					
					State Permanent School Fund	Irreducible University Fund	University 90,000-Acre Grant Fund	Public School Teachers' Permanent Fund	Sheep Inspection Fund	Livestock Inspection Fund
United States Liberty Loan.....	4 1/2%	1917-18	\$107,400.00	\$107,400.00	\$36,200.00			\$21,200.00	\$20,000.00	\$30,000.00
Nevada General Appropriation.....	5 1/2%	1917	17,000.00	17,000.00	14,500.00		\$2,500.00			
Nevada Redeemable School.....	5 1/2%	1879	380,000.00	380,000.00	380,000.00					
Nevada Refunding.....	5 1/2%	1913	220,000.00	220,000.00	165,000.00		55,000.00			
Nevada University Agricultural Building.....	5 1/2%	1917	72,000.00	72,000.00	72,000.00					
Nevada University Experiment Farm.....	5 1/2%	1917	43,000.00	43,000.00	42,000.00		1,000.00			
California.....	4 1/2%	1914	232,000.00	232,000.00	232,000.00					
Idaho.....	4 1/2%	1914	175,000.00	175,000.00	175,000.00					
Massachusetts.....	3 1/2%	1903-08	682,000.00	682,000.00	645,000.00	\$36,000.00	1,000.00			
New Mexico.....	5 1/2%	1914	125,000.00	125,000.00	125,000.00					
Clark County.....	5 1/2%	1914	4,500.00	4,500.00	4,500.00					
Clark County Dormitory.....	6 1/2%	1914	63,000.00	63,000.00	63,000.00					
Elko County High School.....	6 1/2%	1917	50,000.00	53,237.26	53,237.26					
Elko County High School.....	6 1/2%	1917	95,000.00	100,699.80	100,699.50					
Esmeralda County School District.....	5 1/2%	1917	30,000.00	30,000.00	30,000.00					
Esmeralda County.....	6 1/2%	1914	10,000.00	10,000.00	10,000.00					
Humboldt County.....	5 1/2%	1917	70,000.00	70,000.00	70,000.00					
Lincoln County.....	4 1/2%	1916	406,000.00	368,801.32	306,711.39	13,696.31	48,398.62			
White Pine County High School.....	5 1/2%	1915	20,000.00	20,000.00	20,000.00					
White Pine County School Districts.....	6 1/2%	1915-17	16,800.00	16,800.00	16,800.00					
Totals.....			\$2,818,500.00	\$2,790,238.08	\$2,561,448.15	\$49,696.31	\$107,898.62	\$21,200.00	\$20,000.00	\$30,000.00

TABLE H
Interest income on Educational Trust Fund Bonds and School Land Contracts
 (As reported by State Controller)

<i>Interest—</i>		<i>Interest—</i>	
<i>1917</i>		<i>1918</i>	
Bonds owned by School Funds.....	\$38,699.73	Bonds owned by School Funds.....	\$111,108.88
Bank lands.....	2,722.96	Bank lands.....	5,893.88
School lands.....	51,695.87	School lands.....	46,126.60
Mining College lands.....	852.87	Mining College lands.....	940.74
University lands.....	511.51	University lands.....	504.26
	\$154,473.54		\$164,577.06

STATE OF NEVADA

FIRST REPORT

OF THE

STATE HIGHWAY COMMISSION

1917-1918



CARSON CITY, NEVADA
STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT
1919



PERSONNEL OF DEPARTMENT OF HIGHWAYS

BOARD OF DIRECTORS

W. B. ALEXANDER.....	Chairman
GEO. K. EDLER.....	Director
JAMES M. LEONARD.....	Director
C. C. COTTRELL.....	State Highway Engineer
FLOYD O. BOOE.....	Secretary

EMPLOYEES OF DEPARTMENT OF HIGHWAYS IN U. S. SERVICE

Captain ROBERT K. WEST,
U. S. Engineers, France; Former State Highway Engineer

Lieutenant J. E. SMITH,
U. S. Engineers, France; Former Chief of Party

Lieutenant JOSEPH M. KANE,
Machine Gun Corps, Camp Hancock, Ga.; Draftsman

A. D. HARTWELL
23d Engineers; Former Transitman

F. O. ECKELSON
23d Engineers; Former Head Chainman

P. R. DOANE,
23d Engineers; Former Transitman

W. P. BRYANT,
23d Engineers; Former Head Chainman

GEORGE E. BARBER,
Aviation Corps; Former Rear Chainman

F. H. N. WHITING
Infantry; Former Head Chainman

JOHN NESBITT
Cavalry; Former Axeman on Party

JULIAN GLOCK
Aviation; Former Head Chainman

W. D. WEST
Field Artillery, Camp Zachary Taylor, Ky.; Draftsman

LEW M. MEDER
Special Service, Infantry, Unassigned; Clerk

LETTER OF TRANSMITTAL

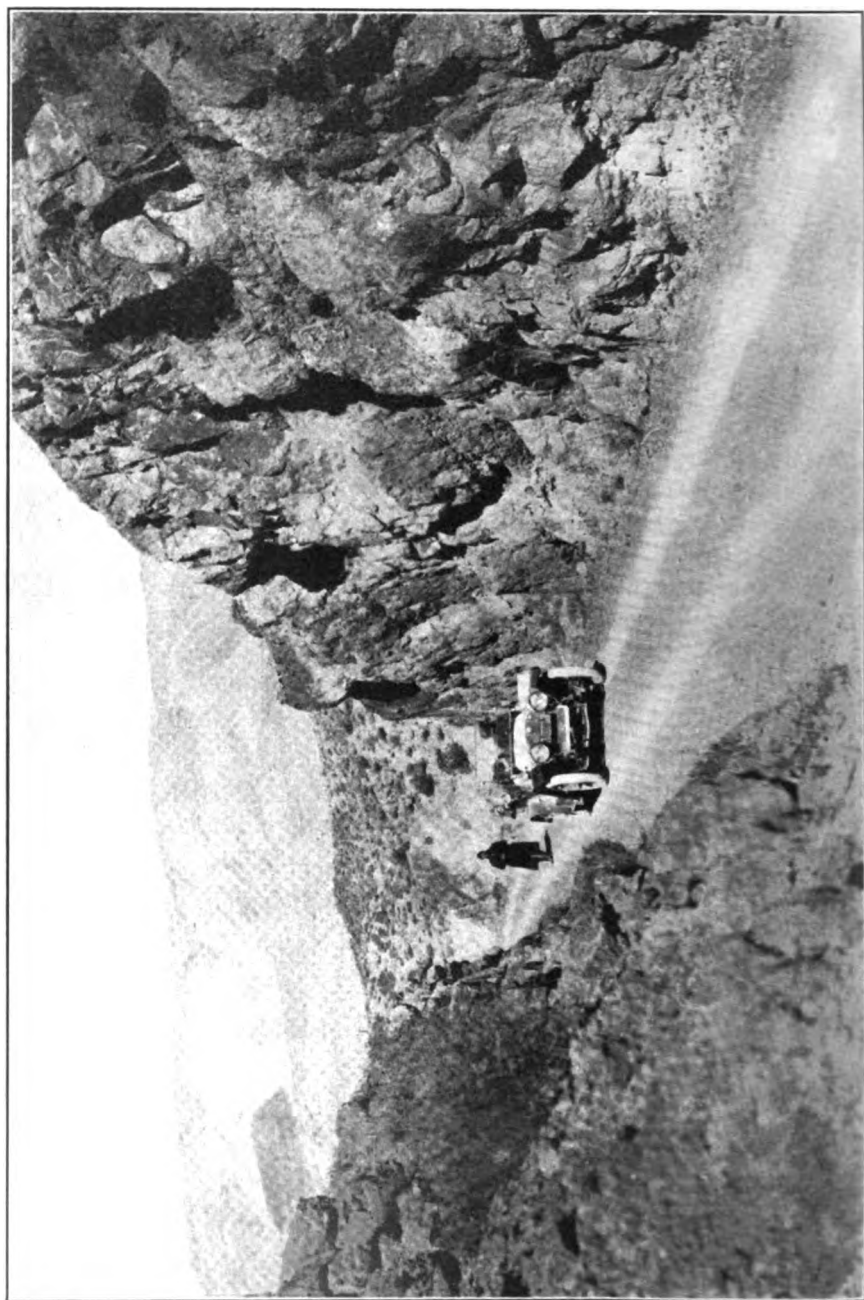
STATE OF NEVADA,
DEPARTMENT OF HIGHWAYS.

To the Honorable EMMET D. BOYLE, Governor of the State of Nevada.

The undersigned, Directors of the Department of Highways, appointed under the provisions of chapter 169, Statutes of 1917, entitled "An Act to provide a General Highway Law for the State of Nevada," herewith submit their first report, which is for the biennial period ending December 31, 1918.

Through this report we desire to express our appreciation and commendation of all the employees of the department, who, through their loyalty and support in our period of organization, have contributed to whatever measure of success has been attained.

W. B. ALEXANDER,
Chairman Board of Directors.
GEO. K. EDLER, *Director.*
JAMES M. LEONARD,
Director.



Abandoned railroad grade in Wauhus County. new portion of State Highway Route No. 1.

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NEVADA



REPORT OF DEPARTMENT OF HIGHWAYS

INTRODUCTORY

Until 1911 the State of Nevada did not participate in any manner in road improvements. During the legislative session of that year an Act was passed which was approved by the Governor March 16, 1911, providing that the State Engineer should have general supervision of road work carried on by convict labor, and an appropriation of \$20,000 was made to carry on the work.

Some work was done in Washoe and Ormsby Counties, but, with the exhaustion of the appropriation, the work ceased and state participation was not again put into effect until the legislative session of 1917.

Appreciating at that time as never before that something must be done to improve the condition of at least the main arterial roads of the State, and acting under the stimulus of the aid extended to the various States by the Federal Government through an Act of Congress passed during the previous year, the Legislature enacted what is commonly known as "The State Highway Law," and it was signed by Governor Boyle on March 23, 1917.

This Act, which was passed after lengthy consideration and upon advice of representatives of the then "United States Office of Public Roads and Rural Engineering," accepted the provisions of the Federal Aid Road Act, designated a system of state highways, provided for an organization to be known as the Department of Highways of the State of Nevada, and made provision for funds with which to carry on highway improvements. All of this was necessary as a prelude to the securing of federal aid.

The Federal Aid Road Act of 1916 was passed primarily for the purpose of aiding and encouraging systematic highway improvements in the various States. The Act provides that aid and cooperation will be extended to the various States only through an organized State Highway Department. The purpose of this provision, aside from having the fewest possible number of agencies with which to deal, was to encourage and extend systematic and skilled supervision and it was deemed impracticable to secure such supervision except through State Highway Departments.

During the month of April, 1917, the Governor appointed a Board of Directors as provided in the State Highway Law. Mr. W. B. Alexander of Reno, Mr. James M. Leonard of Virginia City, and Mr. Geo. K. Edler of Reno were named as its members.

The initial meeting of this board was held in Carson City on April 26, 1917. An organization was perfected by the election of Mr. W. B. Alexander as Chairman, and steps were taken to secure a State Highway Engineer. During the next few weeks many applications were viewed and considered for this position, and on May 19 Mr. Robert K. West was appointed State Highway Engineer, effective on June 1, 1917; and a few days later Mr. C. C. Cottrell was appointed Assistant State Highway Engineer. Mr. Cottrell became the State Highway Engineer on February 1, 1918, upon the resignation of Mr. West.

It was realized at this time that a detailed study of conditions in the State, the necessary negotiations with the Federal Government and the making of surveys and plans would prohibit the doing of actual construction work in the season of 1917, and accordingly plans were made to enter upon a construction program the next year.

Three survey parties were organized and placed in the field that plans, specifications, and estimates might be made at the earliest possible time and in a quantity sufficient to insure a program of construction commensurate with the available funds.

The Federal Government has allotted to this State approximately one million dollars with certain detailed requirements to be fulfilled by the State, among which is one requiring that we contribute an equal additional sum of money. The life of the present federal appropriation is through the year 1921, and it early became obvious to this board that in order to absorb the apportionments from the Federal Government in the time allowed, all of the funds placed at the disposal of the department must be used to obtain federal aid, and that every project of construction must be a federal aid project.

Failure to absorb the federal aid funds within the allotted period would cause their reversion to the Federal Government and their reapportionment to the various other States.

Greatly handicapped by the post-road feature of the Federal Aid Road Act, the department commenced the gathering of information for various project statements which are in reality requests for federal aid in the construction of specific projects. To date twenty such requests have been forwarded to the Secretary of Agriculture, involving an estimated expenditure of \$1,194,263.68, of which aid has been asked of the Federal Government in the sum of \$581,465.40—the State or county obligating itself to pay the balance.

At this time fourteen of these projects have been approved and federal aid granted in the sum of \$407,758.46, providing we meet the other requirements of the Act and the rules and regulations prescribed by the Secretary of Agriculture for carrying out its provisions. No request of this department has been refused, and all that have been granted were approved on the first presentation of arguments. The other six requests for aid are still pending and their early approval is expected.

In addition to the project statements enumerated above, one project under section 8 of the Federal Aid Road Act, which section provides federal aid for the building of roads within or adjacent to the national forests, has been submitted. This asks aid of the Federal Government in the sum of \$16,000—the State to provide a like amount.

The surveys, plans, specifications, and estimates of eight projects were approved by the United States Bureau of Public Roads and a formal agreement entered into between the Secretary of Agriculture and the State of Nevada through its State Highway Department. Other surveys, plans, specifications, and estimates are pending approval.

As originally planned, the department was ready and in a position to do a large amount of construction work in the season of 1918. Both directly and indirectly the vigorous prosecution of the war prevented the carrying into execution of those plans, though not without an exhaustion of effort on the part of our organization.

During the forepart of the season the attitude of the Federal Government to our work was not made clear. Of their greatest requirements we needed but little. Our construction required but little railroad transportation; a comparatively small amount of steel; labor seemed to be available at that time, and the money was in the treasury and could be used for no other purpose. Report after report was made to the various bureaus and commissions which were created in Washington. Every item of our materials and work seemed to require a consideration by a separate authority.

In the middle of the season we were told that under certain conditions we might proceed with our construction and we commenced to advertise for bids. Notwithstanding extensive advertising in the county in which the work was to be done, all over the State and on the Pacific Coast, through purchased space, news items, and individual notices to contractors, we received but one bid—and that was for a reinforced concrete pile trestle over the Humboldt River just east of the town of Lovelock in Humboldt County. The bid price seemed reasonable, but while we were considering the acceptance of the bid the United States Highway Council, which had just been formed, requested that the work be postponed until a later period, and the bid was accordingly rejected.

The attitude of contractors to our work was the same as in other States, where but very little, if any, construction was carried on except that which was contracted previous to such abnormal conditions. The uncertainty of materials and labor, the increasing stringent regulations of the Federal Government, the disorganization of contractors' forces, and the uncertainty of being able to finance their work, were all contributing factors in causing this hesitancy to bid upon our work.

Confident of the ultimate outcome of the war and realizing that upon the cessation of hostilities the Department of Highways might be a large factor in aiding the speedy return of normal conditions, as many surveys, plans, and specifications were made as possible, so that upon the opening of the construction season of 1919 we would be prepared to care for much of the unemployment, secure favorable prices for our work and complete many miles of our State Highway System.

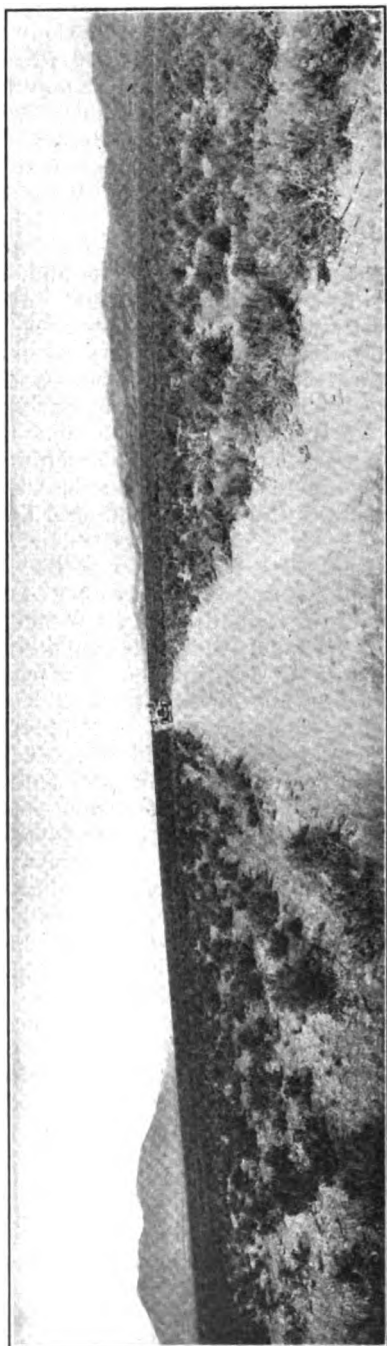
The making of surveys, plans, and specifications is now ahead of the funds available for actual construction. The moment now that weather conditions permit we are in a position to launch our construction program, and that program can be enlarged as rapidly as additional funds become available.

The era of state highway construction in Nevada is about to be entered with the utmost confidence in the preparations made by our organization.

THE FEDERAL AID ROAD ACT AND ITS APPLICATION TO NEVADA

The "Federal Aid Road Act" was signed by the President and became a law on July 11, 1916. It has a twofold purpose: first, promoting the construction of rural post-roads; and, second, encouraging the supervision of roads within the State by competent state officials.

Under the provisions of the Act there has been allotted to Nevada for the period ending June 30, 1921, the sum of \$1,060,169.78, of which



Eliminating two railroad grade-crossings in White Pine County.

\$965,169.78 is to be expended upon "roads over which the United States mails now are or may hereafter be transported," and \$95,000 upon roads which are wholly or partly within the national forest.

The money shall be spent upon substantial construction only and the limit of expenditure which may be made by the United States upon any road is \$10,000 per mile, and in no event shall the share of the United States exceed 50 per cent of the total cost.

Contrary to the belief of many, the money can only be obtained by meeting certain requirements. The Legislature of 1917 met two of these requirements by assenting to the provisions of the Act and by the creation of a State Highway Department.

The greatest obstacle this State has encountered has been to meet the post-road feature. The Legislature of 1917 designated a certain system of state highways consisting of three east-and-west roads across the State and one north and south. A map of this system was submitted to the Secretary of Agriculture as a plan of ultimate attainment of our construction and one upon which the federal aid funds would be concentrated.

Of the 1,450 miles of road in this system less than 250 were in any manner post-roads and of our Highway Route No. 1 across the northern portion of the State, consisting of 440 miles, less than 20 miles were used for the transportation of mail. It was either necessary that we concentrate our construction on the 250 miles of road used for mail purposes, or that we make detailed investigations and submit argument to the Secretary of Agriculture to show that the mail "may hereafter be transported" over the road. The investigations, the securing of evidence and the preparation of arguments have always required time and considerable expense, but in every project thus far submitted the argument presented has been considered sufficient by the Secretary of Agriculture.

At the close of the year 1918 there were three bills before Congress having for their object the removal of the post-road feature of the Federal Aid Road Act and a substantial additional appropriation for its continuance.

In December, 1918, this department initiated and is now vigorously supporting a proposition which, if incorporated in the above Acts, will permit of our sharing in federal funds on the basis of 1 to 3 instead of 1 to 1; in other words, we will get three dollars from the Federal Government for every dollar appropriated locally up to the maximum amount allotted to this State. It is hoped the Legislature about to convene will endorse this suggestion by a memorial to Congress.

The actual financial participation of the Federal Government begins only with the construction of the road. However, the surveys, plans, specifications and estimates which must be made at the expense of the State are required to be submitted to the Secretary of Agriculture for his approval. Thus we are required to do the engineering, not only for the state funds, but for the county funds and those of the Federal Government as well.

In so far as it is possible, our plans and specifications have been standardized. This State is one of very few which have a standard specification approved by the United States Bureau of Public Roads and Rural Engineering.

Upon the approval by the Secretary of Agriculture of the surveys,

plans, specifications and estimates, a formal project agreement is entered into between the Secretary and the State Highway Department by which the federal money actually becomes available and which permits of the commencement of construction.

During construction the Federal Government cooperates with the Highway Department in the matter of inspection, testing of materials and cost-keeping—all of which are necessary adjuncts to the proper construction of roads.

It is the object of the above to briefly summarize the procedure necessary to obtain federal aid and to show how the Federal Government enters into the actual construction of the road. During a period of about eighteen months of cooperation with the Secretary of Agriculture and the United States Bureau of Public Roads and Rural Engineering, we have always found them and all their employees working with but one object—that of assisting us in the proper construction of our roads. Our relations have always been harmonious, permitting of the carrying into effect of the spirit of the Federal Aid Road Act—cooperation.

In passing, the thanks of this department are given to Mr. B. J. Finch, the District Engineer, and his assistants, for their valuable suggestions and assistance.

DETAILS OF LOCATING AND CONSTRUCTING STATE HIGHWAYS

No definite standards of construction of the road, and particularly of the surface, which are applicable to the whole State can be made.

There is no type of road surface which is absolutely permanent, and the selection of a type for a particular road must to a very large extent be gaged by local materials.

The location of the road, the establishing of a grade, the grading and drainage structures can be made permanent and when once made in that manner will sustain any type of future surface. Of the logic of this policy there can be no doubt, for, when those features of the construction are once consummated, future funds can be concentrated on the road surface.

The proper location of our state highways requires considerable thought. The elimination of heavy and oftentimes needless grades, the saving of distance, securing a location free of snow, the removal of dangerous curves and the elimination of railroad grade-crossings are all factors which have to be considered.

The first vehicle through the country has generally made the location for the future roads, with a result that in some cases the roads are very poorly located. The heretofore secondary importance of the roads has resulted in their being promiscuously relocated to make room for railroads, flumes, ditches, fences, and other improvements in the country.

We have set no maximum grade-limit for our state highways, preferring to study each individual project and get the minimum that the country will afford. On the 242.08 miles of state highway now permanently located, all except 10 miles have grades of 5 per cent or less, and in no case have we grades exceeding 7 per cent. The grades between 5 per cent and 7 per cent are for very short distances.

The elimination of railroad grade-crossings is of more importance than generally appreciated. The report of the Interstate Commerce

Commission for the year 1917 shows that 1,737 people were killed and 4,285 injured at railroad crossings in that year. Many of these crossings can be eliminated by a small relocation of the road, while others will require some manner of grade separation. All of the crossings cannot be eliminated at once, but it is our endeavor to reduce the number to a minimum and make the others as safe as possible.

The drainage structures are being made of reinforced concrete, which, though expensive, reduces maintenance to a minimum and insures lasting and efficient structures.

Although in some instances we have provided for a single-track surface, the grading has been planned for a double-track road. There are many places in the State where a single-track surface on a double-track roadbed will answer all the requirements of the present and probably for several years to come, and as the requirement does come the surface can be easily and readily widened.

Of the cheaper types of construction, that of a gravel surface is generally the most suitable for conditions in this State, and where the material is at all available that is the type of surface adopted. The gravel itself is generally suitable for this purpose, but it is almost always found without binding material, such as clay or shale, and when placed upon an inert soil will undoubtedly require considerable rolling for its thorough packing.

Only one piece of the so-called permanent surfacing has been contemplated so far. The road south of Reno to Huffakers in Washoe County, a distance of $5\frac{1}{2}$ miles, will be surfaced with concrete $6\frac{1}{2}$ inches in depth, or Topeka asphalt $1\frac{1}{2}$ inches thick on a broken rock base 5 inches deep. Excellent rock has been found for either of these pavements, but a poor quality of sand. The decision as to the type of pavement depends to a large extent upon the price of cement and asphalt.

Other types of construction have been investigated, but either they are not suited to the climate of Nevada or suitable materials cannot be found.

Water-bound macadam is not suited to this climate, neither can suitable materials for its construction be found. It is doubtful if sand-clay construction would be desirable in so dry a climate, and the proper quality of clay for this type of surface has not been located. Oil roads with the native soil are out of the question on account of their short life and high expense.

There are in this State, and particularly in central Nye County, many miles of road, which, if straightened and properly drained, would be all that could be desired. The disintegrated rock in which they are located seems to form a smooth, hard, and everlasting surface requiring little or no maintenance, and the best we can do for such a condition is to remove the many totally unnecessary turns, fill the washes and provide adequate drainage.

RIGHTS OF WAY

One requirement of the Federal Aid Road Act is that all the rights of way shall be acquired in the name of the State, and in order to have jurisdiction over the road and its drainage it is highly desirable that a width not less than sixty feet be obtained. In many places that width is necessary to make the construction.

Except in a very few isolated cases, no rights of way have hereto-



It is across an alkali flat and called a "road." The improvement will be made in an entirely new location.



The west side of Walker Lake, Mineral County, along the shores of which it is proposed to construct a portion of State Highway Route No. 3.

fore been obtained for road purposes, and no right of way records have been kept by any of the counties.

The department has suggested to the various counties that they furnish the necessary rights of way to the State. By doing this, the State would be able, at least temporarily, to finance the various projects in an amount equal to that of the county. The county officials being better acquainted with local conditions and people can better negotiate with property owners and at a considerably less price than if the State were paying for it.

By far the larger percentage of right of way acquired has been by donation, and this is true in some instances where damage has been done to the property. Some property owners have been very reasonable in their demands, and settlement was easily made. A very few are holding out for exorbitant amounts.

The department makes the necessary surveys and plats and prepares the deeds which are forwarded to the various county officials. After the deeds are signed they are returned to our office for checking and then sent to the County Recorder for recording. There has been no charge by any county for the recording of these instruments.

Two major difficulties have been encountered in securing rights of way: (1) From the Central Pacific Railroad Company where it has been necessary for us to make our location within their right of way; and (2) In the prosecution of condemnation suits.

Along the northern route the existing road encroaches in places on the right of way of the Central Pacific Railroad Company, which is generally 400 feet wide. Through passes and defiles this extraordinary width takes about all the available space. The main road east of Lovelock for a distance of $2\frac{1}{2}$ miles is within this right of way, and our location takes cognizance of this road. It is also necessary in three other places between Lovelock and Oreana that we locate our road within the railroad right of way.

The $2\frac{1}{2}$ -mile stretch east of Lovelock was held by Humboldt County through an agreement with the railroad company secured in 1901, which in brief provided that, so long as Humboldt County paid to the Central Pacific Railroad Company the sum of \$1 per year and so long as the area was not needed for railroad purposes, it might be used as a highway.

To take advantage of the solidity of the present roadbed and because any other location is impossible on account of the improvements made with reference to the existing road, we desire a 60-foot strip through this distance, which is on the outer edge of the railroad right of way and still leaves them 140 feet between their operating track and our road. Three conferences were held with the officials of the railroad company, and a large amount of correspondence was also had with them.

They finally informed us that all they could and would give us was a revocable license, to be terminated at the pleasure of the railroad company. It seems that the terms of the grant under which they received this right of way from the Federal Government prohibits its transfer for any purpose, and the transfer of even a portion would invalidate the whole.

After satisfying ourselves that such was the case, we forwarded the form of instrument proposed by the railroad company to the Secretary

of Agriculture, asking him if that would be satisfactory to the Federal Government, and he immediately replied that it would not.

We were then confronted with a condition of not being able to secure a right of way satisfactory to the Federal Government, and thus could not receive federal aid.

In December, 1918, the matter was again taken up with officials of the Department of Agriculture and it is believed for the present at least the revocable license, while not wholly acceptable to either the Federal Government or ourselves, will be acceptable. The railroad company is now drawing up the instruments.

It is suggested that a memorial be sent to Congress by the incoming Legislature urging the enactment by that body of an Act permitting of the railroad company's releasing to this State the rights of way we



Rock to be used in State Highway construction, Washoe County.

require for our highways which are located within railroad right-of-way grants.

Seven condemnation suits have been initiated by the department as follows:

1. State v. C. P. R. Co. (Humboldt County).
2. State v. Carl Elges (Humboldt County).
3. State v. Nicola Ginnocchio (Washoe County).
4. State v. Mrs. M. E. Brown Estate (Washoe County).
5. State v. J. G. and P. W. Ferretto (Washoe County).
6. State v. L. D. Smith (Washoe County).
7. State v. Mrs. R. E. Schaffer (Ormsby County).

In the case of the State v. L. D. Smith a settlement was made on the basis of the original offer.

The Central Pacific Railroad case will be dismissed upon receipt of the revokable licenses proposed by that company.

The suit against Carl Elges will be tried immediately after the first of the year.

The suits against Nicola Ginnocchio, the Mrs. M. E. Brown Estate, and J. G. and P. W. Ferretto were filed in Washoe County during the month of May, 1918, and the court asked for immediate possession in order that we might get that work under way during the season of 1918. At the time of asking for this immediate possession, labor was available for the work, the weather was good, and we had the money. The court denied our application and we were not permitted to do the work that season. These cases will come up for trial shortly after the first of the year.

Unless we are to be severely handicapped in our work, there must be no question of our power of selection of route, our right of condemnation, or our right to immediate occupancy during the pendency of the suit.

And we would suggest further that, if possible, the court be required to instruct the jury in these suits, in making a determination of damages, to take cognizance of the benefits to accrue to the property.

To date the State has acquired 721.46 acres of right of way at a total cost of \$1,484, or \$2.05 per acre, to the counties and State. The expense to the State, other than actual considerations, has been \$553.52, or \$0.76 per acre.

PROJECT STATEMENTS

The following project statements have been submitted to the Federal Government and aid asked for the improvement of the road therein contained:

Federal Aid Project No. 1—Humboldt County

This is for the improvement of the road in Humboldt County from Lovelock to Zola and for the construction of a reinforced concrete bridge over the Humboldt River near Kodak.

The total length of the road is 17.3 miles and the roadway improvement consists of a grading width of 20 feet upon which is to be placed a gravel surface 15 feet wide and 5 inches thick after compacting for the first three miles east of Lovelock. The balance of the distance will receive a similar surface 10 feet wide.

The structure over the Humboldt River has been designed as a reinforced concrete pile trestle 146 feet long and with a roadway width of 18 feet.

Except for the first two and one-half miles east of Lovelock, the road is a nonpost route. It was necessary therefore to submit argument to the Federal Government that mail would some time in the future be carried over this project.

The project statement was submitted on November 18, 1917, and approved by the Federal Government on December 12, 1917.

The total estimated cost of this project was \$92,189.94, of which the Federal Government by its approval agreed to pay \$46,094.97.

The balance of the original estimate was to have been distributed as follows:

Humboldt County-State Highway Fund.....	\$27,567.94
State Highway Fund.....	18,527.03

An estimate compiled after the surveys were made permitted of the State and county sharing equally in this work.

The surveys for this project have been completed as have the plans, specifications and estimates. They have all been approved by the Federal Government and a formal project agreement signed with the Secretary of Agriculture on September 6, 1918.

The above work will be completed during the season of 1919.

Federal Aid Project No. 2—Nye County

This project contemplates the construction of the road from the east city limits of Tonopah to the western boundary of the Monitor Division of the Toiyabe National Forest.

The length of this proposed improvement is 14.3 miles. The grading is to be 18 feet wide upon which is to be placed a 5-inch compacted gravel surface 9 feet wide, all at an estimated cost of \$35,790.66, distributed as follows:

Federal Government.....	\$17,805.33
State Highway Fund.....	10,690.49
Nye County-State Highway Fund.....	7,195.84

The surveys, plans, specifications, and estimates have all been completed and approved by the Federal Government. A project agreement was signed by the Secretary of Agriculture and the State Highway Department on August 20, 1918. This work was advertised during the season of 1918, but no bids were received. Advertisements will again be made and the work contracted during the month of February, 1919.

Federal Aid Project No. 3—Churchill County

The road embraced in this project is from Fallon to Leeteville, a distance of 8 miles. The project also includes two reinforced concrete bridges, one over the Truckee-Carson Canal, and the other over the Carson River. This road has been relocated so as to eliminate the two railroad crossings and to secure better alignment. The officials of Churchill County have secured for the State all of the needed right of way for the elimination of these crossings.

Authority has been secured from the Reclamation Service for the construction of the bridge over the Truckee-Carson Canal.

The road improvement will consist of grading 21 feet wide upon which is to be placed either a gravel or crushed-rock surface 15 feet wide and 5 inches thick. It was originally planned to make this improvement of a sand-clay type, but thorough investigations have proven that the sand is not suitable for this type of surface and the available clay is totally inadequate.

The nearest gravel for surfacing is at the Lahontan Dam about 12 miles from the project in an air line and 23 miles by rail. Successful negotiations were had with the Federal Government for the use of this material, but during the pendency of negotiations for a reasonable freight rate, the Federal Government increased rates and took the matter entirely out of the hands of the railroad company and our State Railroad Commission.

Rock, although not as desirable as gravel, can be obtained about 1½ miles east of Fallon at what is known as Rattlesnake Hill.

The two bridges have been designed of reinforced concrete and for a roadway of 18 feet.

The total estimated cost of this project, including the two bridges, is \$57,195.20, distributed as follows:

Federal Government.....	\$28,597.60
State Highway Fund.....	14,298.80
County-State Highway Fund.....	5,838.39
Special County Fund.....	8,460.41

A project statement was submitted to the Federal Government on October 24, 1917, and approved on December 15, 1917, which made available the Federal Government's share of the estimated cost.

The surveys, plans, estimates, and specifications have been made and approved by the Federal Government and a project agreement signed on November 23, 1918.

This work will be completed during the year 1919. Advertisements for the bridges will be placed early in the year so as to have them well under way before the contract is let for the road.

Federal Aid Project No. 4—Douglas County

This is a portion of the road between Gardnerville and Holbrook and is for a distance of 4 miles between Carter's Station and a point 3 miles north of Holbrook.

The improvement will consist of grading 15 feet wide mostly in a new location to avoid sharp turns, secure better material, better drainage and to make the road free of snow. Upon this graded road-bed is to be placed a crushed-rock surface for 25 per cent of its length to care for bad soil conditions.

The estimated cost of this construction is \$11,230.12, divided as follows:

Federal Government.....	\$5,615.06
State Highway Fund.....	3,484.82
Douglas County-State Highway Fund.....	2,130.24

The project statement was submitted on November 8, 1917, and approved by the Secretary of Agriculture on December 6 of the same year.

This road crosses lands allotted to Indians. Application for the necessary rights of way has been made to the Indian Service, but has not as yet been approved.

The surveys, plans, specifications and estimates have all been made and approved by the Federal Government. A project agreement was signed with the Secretary of Agriculture on November 23, 1918.

The money is available for this project, and it is ready to advertise, but the work may be delayed until after the construction of Federal Aid Project No. 20, which lies to the north of this one and is deemed of more immediate importance.

Federal Aid Project No. 5—Elko County

The road included in this project is between the west city limits of Elko and Vivian, a small railroad siding about 3 miles east of Carlin. The entire length of 20 miles is to be graded 20 feet wide upon which is to be placed a gravel surface 10 feet wide and 5 inches thick after compacting.

This section is not a post-road, and it was very difficult to gather sufficient evidence to present to the Secretary of Agriculture that it

would eventually become one. However, a project statement was submitted on December 14, 1917, and approved on January 1, 1918.

The estimated cost was \$97,812, of which one-half was asked and granted by the Federal Government. The total estimated cost is divided as follows:

Federal Government.....	\$48,906.00
State Highway Fund.....	24,453.00
Elko County-State Highway Fund.....	24,453.00

All the surveys, plans, specifications and estimates have been completed and approved by the Secretary of Agriculture and a project agreement entered into with the Secretary on October 23, 1918.

The officials of Elko County have acquired all of the necessary rights of way by donations except one unimportant parcel.

Federal Aid Project No. 6—White Pine County

This project 12 miles long lies between Keystone and Robinson Summit, and is a new location. The existing road between Ely and Illipah goes by way of Kimberly and crosses two mountain summits. It is a very crooked road, has heavy grades and is subject to severe snow blockades. The new location found by our engineers crosses but one low summit, that of Robinson Pass. The grades are easy and the road will not be so susceptible to snow.

This construction with that contemplated in Project No. 10 will complete the road to Illipah, at which point it joins the existing road.

The improvement contemplated is a graded roadway 20 feet wide upon which is to be placed a gravel surface 9 feet wide and 5 inches thick after compacting, all at an estimated cost of \$81,954.40, of which the Federal Government will pay one-half. The total cost is to be distributed as follows:

Federal Government.....	\$40,977.20
State Highway Fund.....	21,072.15
White Pine County-State Highway Fund.....	19,905.05

Following the approval of our surveys, plans, and specifications a project agreement was signed with the Secretary of Agriculture on November 5, 1918.

The work will be advertised in the latter part of next February, and the contract let if favorable bids are received.

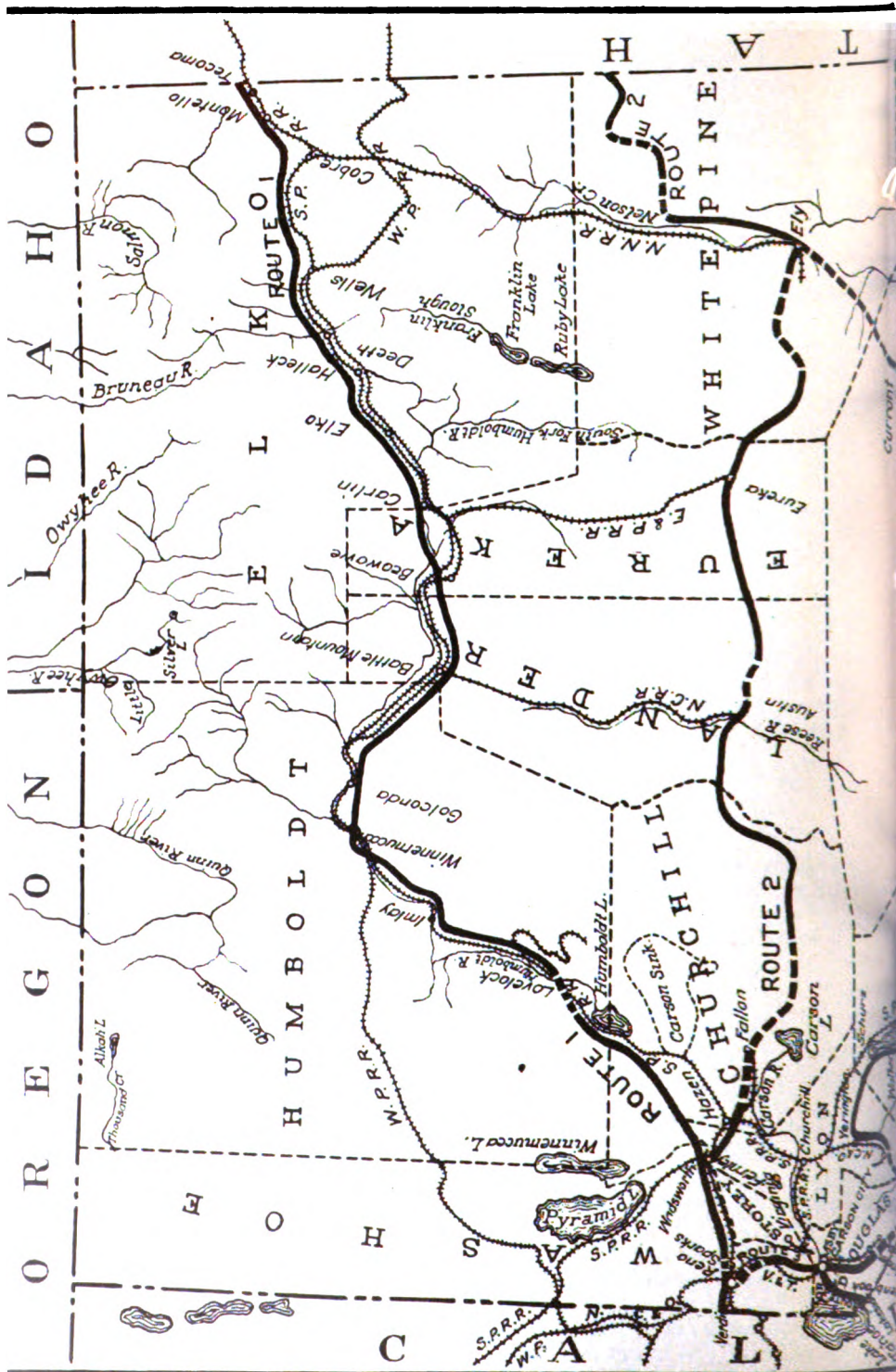
Federal Aid Project No. 7—Washoe County

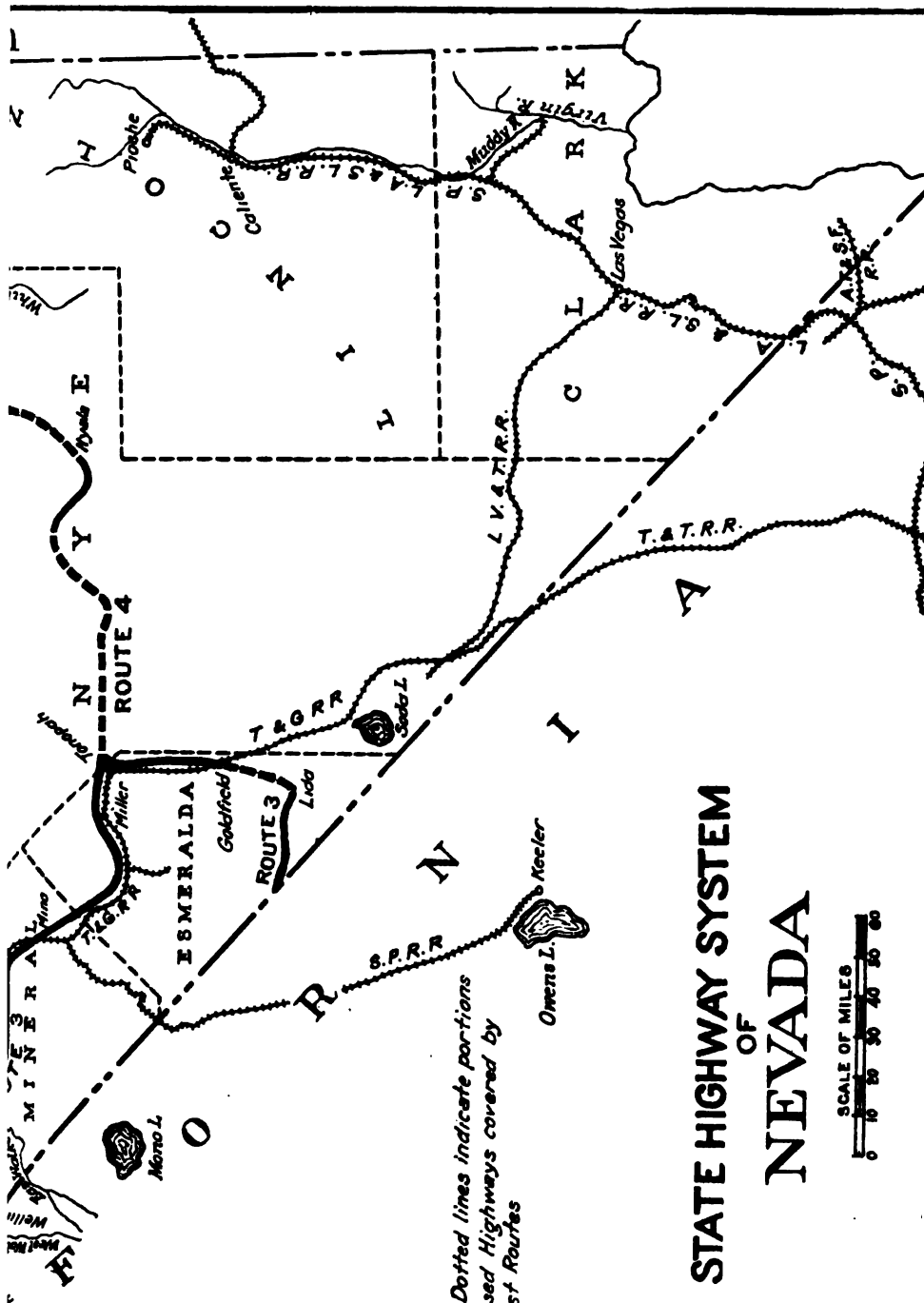
This project has for its object the construction of a road from Hufakars to Washoe Summit, a distance of 9.52 miles. Washoe Summit is the divide at the north end of Little Washoe Lake and is the forking point for the roads on either side of Washoe Lake.

The existing road is badly located, in that there are seven dangerous grade crossings, a few sharp curves and steep pitches. The new location avoids all of these except one crossing, and that has been relocated so as to secure an open view. About one-half the existing road is used in the new location.

The contemplated improvement is a graded roadway 21 feet wide upon which will be placed a gravel or bituminous macadam surface 15 feet wide and 5 inches thick after compacting.

The road is not a post-road, and some difficulty was anticipated in securing the approval of the project by the Federal Government. It





NOTE: Dotted lines indicate portions of proposed Highways covered by U.S. Post Routes

STATE HIGHWAY SYSTEM OF NEVADA



was submitted on March 22, 1918, and approved June 6, 1918. The approval carried with it \$40,977.20 of federal funds.

The estimated cost is \$81,954.40, segregated as follows:

Federal Government.....	\$40,977.20
State Highway Fund.....	21,072.15
County State-Highway Fund.....	19,905.05

The project agreement for the grading portion of this project was signed with the Secretary of Agriculture on August 29, 1918, and it was our desire to do this work immediately thereafter. However, our inability to secure immediate possession through condemnation of certain rights of way prevented the construction at that time.

The determination of the type of surface for this road has not been definitely made. The construction will be completed during the season of 1919, provided the rights of way are secured.

Federal Aid Project No. 8—Lyon County

This project is known as the "Wilson Canyon Road" and is one of the most important in the State. The present road from Wellington to Yerington follows a circuitous route over Mason Pass. The canyon of the West Walker River affords a route 17 miles shorter and at the same time avoids the mountain summit. It does, however, present some difficult construction features.

This particular project has for its object the construction of a road from the east end of the canyon—a ranch known as Wilson's—to the Hudson-Aurora road in Smith Valley, a distance of 7 miles. The construction requires the moving of 2,846 feet of the tracks of the Nevada Copper Belt Railroad and the construction of a bridge over the West Walker River at a point locally known as the "Bulkhead."

The work is planned for a graded roadway 15 to 21 feet wide with a selection of material for surfacing, the construction of a reinforced concrete arch bridge over the West Walker River, the moving of the railroad tracks and the work incident thereto. All of this has been estimated to cost \$6,915.30, to be distributed in the following manner:

Federal Government.....	\$32,957.65
State Highway Fund.....	6,955.65
County-State Highway Fund.....	6,002.00
Lyon County Special Appropriation.....	20,000.00

It will be observed that Lyon County has contributed \$20,000 toward this construction in addition to the money in the County-State Highway Fund.

The project statement was submitted on May 11, 1918, and it was approved on June 13, 1918, making available \$32,957.65 of federal money.

To secure the proper location, several preliminary lines were run through the county, and to do the work in the most economical manner a detailed study was made of the project by our engineers.

The surveys, plans, specifications and estimates were approved by the Secretary of Agriculture. For the purpose of facilitating the carrying on of the work the project has been divided into three parts: (1) The canyon proper; (2) the bridge, and (3) the road west from the bridge to the Hudson-Aurora road.

On November 2, 1918, a project agreement was entered into with the

Secretary for the third unit. The other agreements will arrive from Washington very shortly. They have been delayed because of a difference of opinion over right-of-way matters which has now been settled.

All of the rights of way for this project have now been secured except that of the Nevada Copper Belt Railroad, and that has been promised.

The work will be started soon after the first of the year, as it is our desire to have all of this completed by June 1, 1919. The completed road will be scenic and of the greatest local economic importance.

Federal Aid Project No. 9—Washoe County

This project is for the 5.4 miles of road between the south city limits of Reno and Huffakers. The improvement will consist of a graded roadbed 24 feet wide upon which will be placed either concrete 18 feet wide and 6½ inches thick or some sort of bituminous macadam, or a broken-rock base 5 inches thick with a Topeka or bitulithic surface about 1½ inches in depth. The determination of the type of pavement depends upon the prices which may be secured for the various materials. The securing of favorable freight rates is an important item in the economical construction of this road.

The estimated cost of this improvement is \$139,792.86, divided as follows:

Federal Government.....	\$54,230.00
State Highway Fund.....	52,562.86
County-State Highway Fund.....	33,000.00

The project statement was submitted on October 5, 1918, and approved October 24, 1918. By this approval the Federal Government allotted \$54,230 to this road, the maximum amount of \$10,000 per mile which is allotted to any road.

The surveys have all been completed and the plans and specifications about ready to send to the Secretary of Agriculture. It is planned to do this work during the summer of 1919.

Federal Aid Project No. 10—White Pine County

This project is a continuation of Project No. 6, and is located between Robinson Summit and Illipah, a distance of 16.5 miles.

The improvement will consist of a graded roadway 20 feet wide with permanent drainage structures, and upon the first ten miles east of Illipah is to be placed a gravel surface 9 feet wide and 5 inches thick after compacting. The estimated cost is \$94,000, divided as follows:

Federal Government.....	\$47,000.25
State Highway Fund.....	23,500.12
County-State Highway Fund.....	23,500.13

The project statement was submitted on October 28, 1918, and approved January 18, 1919.

The surveys have not been made for this project; however, it is planned to make them in the early spring and do the construction in season of 1919.

Federal Aid Project No. 11—Esmeralda County

This project embraces the 8.9 miles between the south city limits of Tonopah and the Millers "cut-off" road on the Tonopah-Goldfield road. The improvement consists of a graded roadway 15 feet wide with per-

manent drainage structures, and is estimated to cost \$38,330.49, divided as follows:

Federal Government.....	\$19,165.24
State Highway Fund.....	9,582.62
County-State Highway Fund.....	9,582.63

This road is a nonpost-road and it required considerable time to secure the necessary information for the Secretary of Agriculture.

The project statement was submitted on October 28, 1918, and approved on December 19, 1918. The surveys, plans, specifications and estimates have been made and submitted to the Secretary for his approval, which is expected within the next few weeks. This work will be done during the season of 1919.

Federal Aid Project No. 12—Lyon County

This project, 2.4 miles in length, is an extension of Federal Aid Project No. 8 west to "Smith's Corners," and permits of the use of the other project to its fullest extent.

The graded roadway will be 21 feet wide, and the first mile east of Smith's Corners is to receive a gravel surface 15 feet wide and 5 inches thick after compacting.

The estimated cost is \$9,515, distributed as follows:

Federal Government.....	\$4,757.50
State Highway Fund.....	2,378.75
County-State Highway Fund.....	2,378.75

The project statement was submitted on November 15, 1918, and approved by the Secretary on January 7, 1919.

The survey will be made in February, and it is hoped to complete the construction by July 1 next.

Federal Aid Project No. 13—Nye County

The road contemplated in this project is a portion of the Tonopah-Ely road via Nyala. The project embraces that portion between the Troy road and Butler's ranch, a distance of 25 miles. The present road is through an alkali flat, and is almost impassable. A new location is taken back in the foothills where a satisfactory foundation can be obtained. The improvement will consist of grading 15 feet wide, and with the drainage structures is estimated to cost \$40,700, and is divided as follows:

Federal Government.....	\$20,350.00
State Highway Fund.....	10,175.00
County-State Highway Fund.....	10,175.00

The project statement was submitted on November 15, 1918, and approved December 17, 1918.

The surveys will be made in the spring of 1919, and the construction undertaken during the late part of the same season.

Federal Aid Project No. 14—Douglas County

This project extends from Minden to a point 3 miles north thereof, partly on a new location donated to the State by the Dangberg Company. The new location will shorten the distance considerably and remove three sharp turns.

The project contemplates a graded roadway 24 feet wide with per-

manent drainage structures upon which is to be placed a gravel surface 15 feet wide and 5 inches thick after compacting.

The estimated cost is \$19,954, apportioned as follows:

Federal Government.....	\$9,977.00
State Highway Fund.....	4,988.50
County-State Highway Fund.....	4,988.50

The project statement was submitted on November 15, 1918, and approved by the Secretary on January 20, 1919.

The surveys will be made in February and the plans immediately thereafter. It is planned to do this work during the coming season.

Federal Aid Project No. 15—Elko County

This project is the 8.1 miles between Vivian and the West Elko County line. It is also a continuation of Federal Aid Project No. 5. The improvement will consist of a graded roadway 20 feet in width with permanent drainage structures, and is estimated to cost \$51,726.95, divided as follows:

Federal Government.....	\$25,863.47
State Highway Fund.....	12,931.74
County-State Highway Fund.....	12,931.74

The project statement was submitted on December 28, 1918, and is now pending approval. The surveys have been made, but the plans have not been started. The construction of this project will be undertaken during the coming season.

Federal Aid Project No. 16—Lander County

This project is between Battle Mountain and the west Lander County line on the south side of the railroad. Its length is 8.8 miles and the location eliminates two grade-crossings—that at Battle Mountain and the one at Valmy.

The construction contemplated is a graded roadway 15 feet wide with permanent drainage structures. It is planned to later place a gravel surface on this road.

The improvement is estimated to cost \$28,550.50, apportioned as follows:

Federal Government.....	\$14,275.25
State Highway Fund.....	7,137.62
County-State Highway Fund.....	7,137.63

The project statement was submitted to the Federal Government on December 28, 1918, and we are awaiting its approval. The surveys have been made and plans started. It is our plan to have this construction completed before the next winter's snow.

Federal Aid Project No. 17—Lyon County

The road contemplated in this project is from Yerington to a point 6.25 miles south thereof. It is intended to improve the existing road by making a roadway 21 feet wide, upon which is to be placed a packed gravel surface 5 inches thick and 15 feet wide, all at an estimated expenditure of \$36,916, to be apportioned as follows:

Federal Government.....	\$18,458.00
State Highway Fund.....	9,229.00
County-State Highway Fund.....	9,229.00

The request for federal aid was submitted on December 28, 1918, but has not yet been approved. The road is a post-road, and there would seem to be no reason for the rejection of the request.

The surveys, plans and specifications will be made during the coming spring and an effort made to get the construction under way during the summer.

Federal Aid Project No. 18—Elko County

This project is between the east city limits of Elko and the North Fork road and is a portion of the Elko-Deeth road. The entire length of 16 miles is to be improved by making a graded roadbed 21 feet wide, upon which will be placed a gravel surface 5 inches thick after compacting, and 15 feet wide. In order to eliminate some sharp curves and to reduce steep pitches, the road will be relocated in two places.

The estimated cost is \$108,668.45, to be apportioned as follows.

Federal Government.....	\$54,334.23
State Highway Fund.....	27,380.64
County-State Highway Fund.....	26,953.59

The project statement for federal aid was submitted on December 28, 1918, and is now pending approval.

This road cannot be constructed until late in the season of 1919, as the surveys, plans and specifications have not been made and the federal funds, if allotted to this project, cannot become available until after July 1, 1919.

The road is a nonpost-road; however, it is hoped the argument that it will eventually become one, is sufficient and that the Secretary of Agriculture will approve the project.

Federal Aid Project No. 19—Humboldt County

This project has for its purpose the improvement of a portion of the Winnemucca-Lovelock road, and if there is any project in the State worthy of federal assistance, it is this one. The present road by reason of its poor location in an alkali flat is almost impassable at all seasons.

The contemplated improvement is between Zola and a point 3 miles north of Mill City, a distance of 31.1 miles. The western terminus of the project is in the eastern terminus of Federal Aid Project No. 1.

The improvement will consist of a graded roadway 20 feet wide with permanent drainage structures, in a new location which is back in the foothills, where a more stable foundation can be secured.

The estimated cost is \$109,817.40, to be distributed, if federal aid is granted, as follows:

Federal Government.....	\$54,908.70
State Highway Fund.....	27,454.35
County-State Highway Fund.....	27,454.35

The road is a nonpost-road. However, it is hoped the Secretary of Agriculture will consider the argument of its ultimately becoming one as sufficient, and that the aid will be granted.

The project statement was submitted on December 24, 1918. The survey will probably be made during the early spring months. The construction, however, cannot be started until after July 1.

Federal Aid Project No. 20—Douglas County

This project is a continuation in a northerly direction of Federal Aid Project No. 4, and lies between Carter's Station and a point 2 miles

north thereof on the Gardnerville-Holbrook road. This is a relocation of the existing road to get into better material and avoid snow blockades.

The improvement will consist of a graded roadway 15 feet wide with permanent drainage structures. Some of the excavation necessary is in solid rock.

The estimated cost is \$11,734.58, to be distributed as follows:

Federal Government.....	\$5,867.29
State Highway Fund.....	2,933.64
County-State Highway Fund.....	2,933.65

The project statement was submitted as of January 18, 1918, and its early approval is anticipated, as this is a post-road.

The surveys will be made immediately and the work started as soon as the plans and specifications are approved.

Forest Project—Nye County

In addition to the above twenty projects another has been submitted under the provisions of section 8 of the Federal Aid Road Act.

This is for that portion of the Tonopah-Ely road in Nye County, which is through the lower end of the Monitor Division of the Toiyabe National Forest.

This project, known as the "Tonopah Project," commences at the eastern terminus of Federal Aid Project No. 2, and continues in an easterly direction through the national forest for a distance of 16 miles to the Stone Cabin road.

The construction will consist of a graded roadway 18 feet wide with permanent drainage structures, and is estimated to cost \$32,000, apportioned as follows:

U. S. Forest Service.....	\$16,000.00
State Highway Fund.....	16,000.00

Under the provisions of the application the Federal Government will make the surveys and do the construction, the State agreeing to pay for one-half of the total cost, including surveys and the preparation of plans.

It is thought the surveys for this project will be made during the coming year. However, it is doubtful if the construction can be done before the season of 1920.

Other projects than the above will be submitted to the Federal Government as fast as data can be collected and the money is available for their financing.

MILITARY INFORMATION

A realization came to the War Department in the summer of 1917 that very little that was of military value was known of the United States. The cooperation of the various States was asked for certain detailed information, to be compiled in a systematic manner, particularly roads and local industries.

A representative of the War Department visited this State and asked that we undertake the collection of this data for them. After a consultation with yourself and the State Council of Defense, and because a considerable portion of this information would be of value to the Department of Highways, we undertook its collection.

The War Department detailed a soldier stenographer for the purpose

of compiling the information. The data collected was obtained by both our own effort and securing the cooperation of various civic bodies and public-spirited citizens.

As a basis upon which to work and for ready reference, the State was divided into quadrangles of 15 minutes longitude and 15 minutes latitude. The Forest Service took those quadrangles in which were located the forest areas.

A special agent was appointed by the department to assist in gathering the information in isolated quadrangles, and he gathered all the information for Elko County, and was operating in Humboldt County when we ceased operations.

As there was considerable expense attached to this work and believing that the War Department would have men available for that purpose after the signing of the armistice, we discontinued the gathering of this information on December 1, 1918. However, we are still assisting them as much as is possible without further expense to the department.

Altogether we have collected information over about one-fifth of the area of the State outside the forest boundaries.

The assistance rendered by various individuals and civic bodies is appreciated and much of the credit should be given them.

MAINTENANCE

It has been the history in every State that where a road is designated as a state highway the local officials cease giving it any attention; and in this State that has largely been the procedure of the county officials.

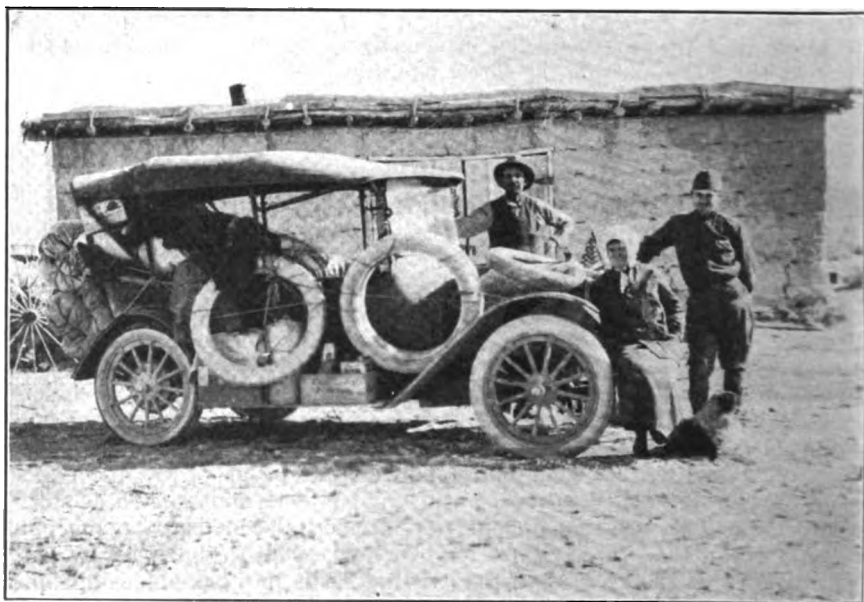
Upon the creation of the Department of Highways and the naming of your Board of Directors, it was thought the better policy would be to concentrate all our effort on construction and confine the maintenance operations to those roads which have been improved as state highways. The fact that we were unable to do construction work during the season of 1918, as originally planned, and because some of the sections of our State Highway System were becoming in a deplorable condition, we decided to inaugurate some maintenance work, so as to put the roads in at least a passable condition until they could be constructed as state highways. This decision on our part seemed also to be carrying out the desires of the United States Highways Council, in that they repeatedly suggested the keeping of the existing roads in a passable condition rather than undertaking new construction during the period of the war.

The maintenance work was started late in the season of 1918—in fact, so late that we could not do any work upon some of the sections which were particularly bad and which were early closed on account of snow.

For the purpose of carrying on this work considerable equipment had to be purchased, such as shovels, fresnos, plows, scarifiers, and trucks. A White "Good Roads" truck was purchased for the purpose of graveling and rolling certain sandy sections on the northern route. It is also adapted to scarifying and removing the tie-marks on the abandoned railroad grade which forms a considerable portion of Route 1. The same equipment thoroughly rolls and compacts the ballast after it has been torn up. Three one-ton Ford trucks were purchased for the purpose of transporting men and materials. Two Fordson tractors were bought for the purpose of pulling road-drags and graders. A con-

siderable number of staunch tool-boxes of a standard design were made and placed along our roads, and these were supplied with such hand-tools as might be necessary for the proper carrying on of our operations.

The work undertaken on Route 1 consisted mainly of improving the road between Lovelock and Wadsworth, which had been washed out in three places by cloudbursts in the early fall, necessitating the repair of drainage structures and the preparation of a new roadbed at isolated points. A considerable amount of gravel and lime rock was placed on the sandy stretches east of the town of Wadsworth as also on other portions of this road. The corduroys and tie-marks have been removed from a large portion of this entire section—all of this putting the road in first-class condition. The frost in the roadbed between Wadsworth and Reno has prevented its being scarified and rerolled. However, the organization is prepared to do that work as soon as possible.



One type of tourist passing through Nevada.

Some grading and dragging was done between Lovelock and Winnemucca and will be continued as the moisture in the road surface will permit.

An effort was made to grade the road known as the "Boulder Flat" between Battle Mountain and Carlin, but with unfortunate results. There was no available equipment at Battle Mountain or vicinity, which necessitated our borrowing a grader from the officials of Humboldt County and shipping it to Battle Mountain. Just as this was transported to the site of the work and as our organization with this and other equipment was on the ground and ready to commence operations, a severe snowstorm came and necessitated our ceasing operations until early spring. The grader had to be shipped back to Winnemucca for the use of Humboldt County in its own road work.

On Route 2 practically a new road was built through the Newpass Canyon in eastern Churchill County. The existing road which was in the floor of the canyon was completely washed out by a cloudburst, necessitating a long detour in traveling from Fallon to Austin. Because of the isolation of this work from any settlement it was necessary to establish a camp, which was economically operated—the cost per meal per man for our forces (including the hire of a cook) was 45 cents. This work was completed late in the season and will not be of advantage to the public until snow conditions permit of the use of this road. Other work in the same vicinity, such as grading, dragging, and filling of washes, was done from the Newpass camp.

The road from Fallon to Hazen, as well as from Fallon to Frenchman's Station, was greatly improved by the installation of new drainage structures and by grading and dragging.

The bridge over the Carson River two miles west of Fallon was in a very unsafe condition, it being almost ready to collapse under its own weight. This bridge, which is a very old structure and is to be replaced during the coming season by a reinforced concrete trestle, was temporarily repaired so as to make it safe for the traveling public.

On Route 3 considerable maintenance was done on the Kings Canyon road west of Carson City. This road, which is one of considerable importance, is very winding and narrow. The roadbed was considerably widened and bettered by the elimination of sharp pitches. The work was carried on as long as the weather would permit, and, while not completed, enough headway has been made that in the early spring a satisfactory road can be made from Carson City to Lake Tahoe. As far as it was possible to do so, convicts were used on this work with very satisfactory results, especially since they could be fed and housed at the Prison.

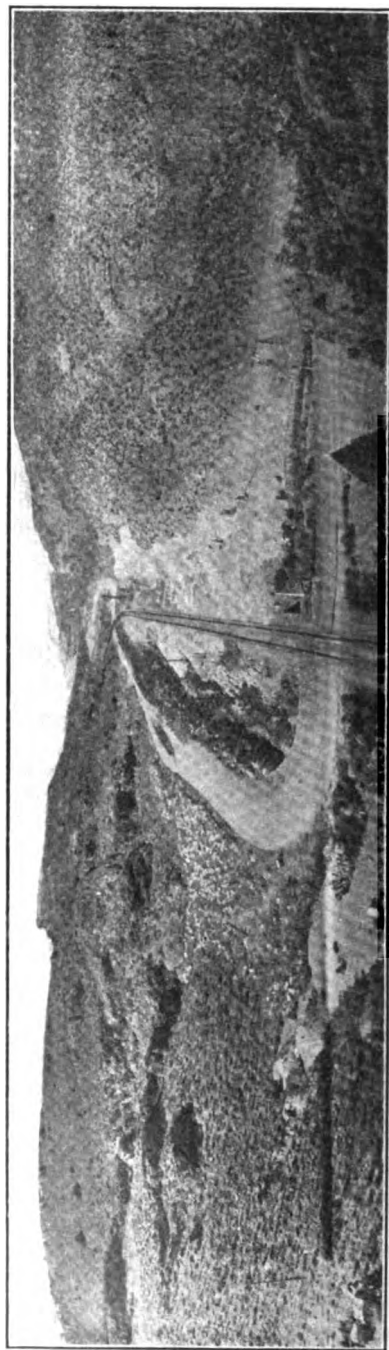
A portion of the road between Reno and Carson City was greatly improved with the use of convicts, by removing most of the larger rocks and by grading and dragging. It is, however, almost impossible to maintain this road in good condition during the winter on account of the heavy traffic which the road is required to sustain.

The road between Tonopah and Mina was greatly improved by the filling of a considerable number of the washes and by removing rocks.

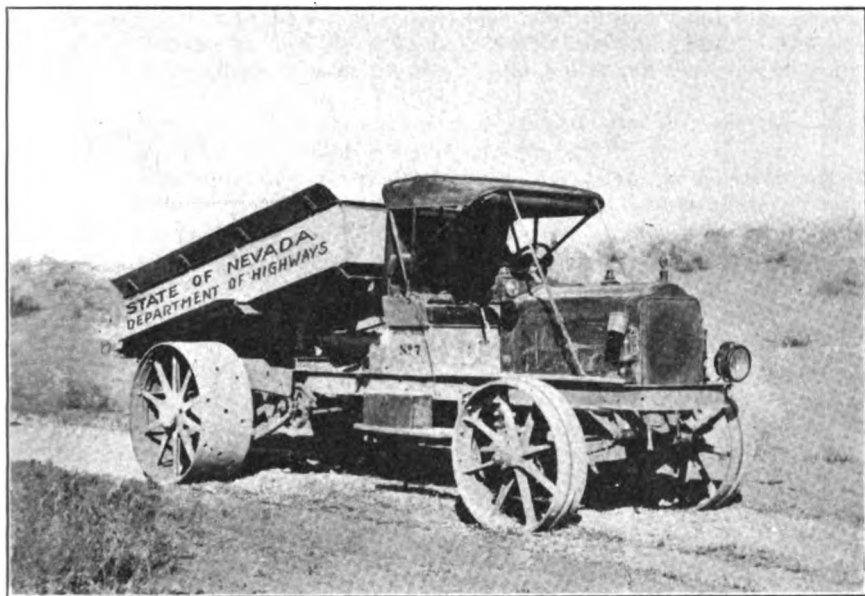
The Tonopah-Ely road on Route 4 was improved by concentrating our efforts on its worst section, that between Butler's Ranch and Nyala. This 40 miles of road is through a very silty alkali flat and is almost impassable at all seasons of the year. Previous to closing down of our work for the winter we had improved 25 miles of this section and will complete the balance as soon as weather conditions permit.

Considerable work was done on the road between Tonopah and Goldfield and it is now in good condition.

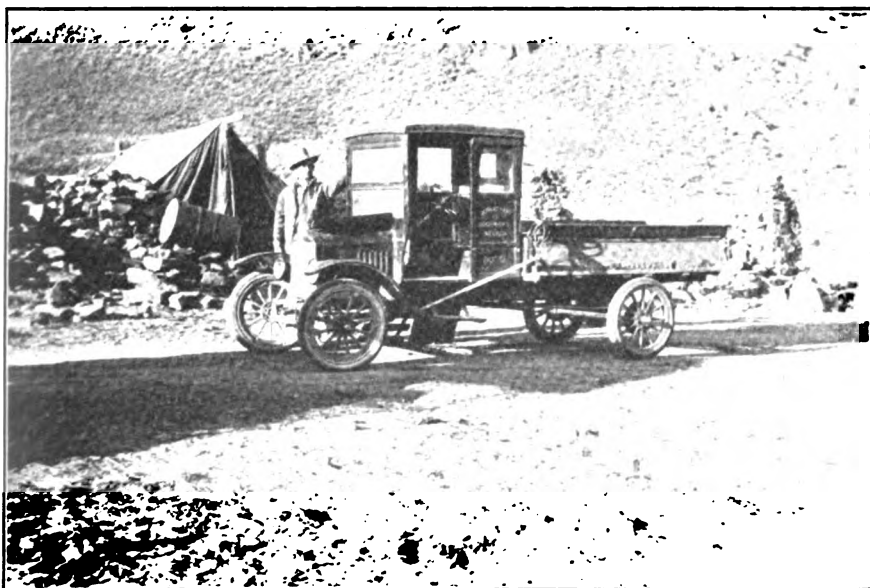
It is our intention, as soon as weather conditions permit, to patrol the whole of our State Highway System, filling small washes where necessary, repairing culverts, and improving the road surface as much as is possible with a small crew. And it is believed that by doing this, together with the maintenance work completed during the season just closed, that the transcontinental roads in Nevada will be in a better condition than ever before, and that no tourist should have any trouble in negotiating them.



Typical Nevada desert road in White Pine County.



Type of maintenance equipment owned by State and used for heavy work.



Patrol truck used on maintenance work.

TABLE SHOWING EXPENDITURES ON MAINTENANCE WORK, 1918

General authority number	Special authority number	County	Route	Section	Authorization	Expended	Balance	Class and location of work
4	1	Churchill	1	A	\$200.00	\$163.43	\$36.57	Construction of maintenance house near Leeete.
		Churchill	1	A	1,500.00	898.96	601.04	Grading and dragging; Leeete to north county line.
	6	Churchill	2	B	400.00	379.82	20.18	Repair of bridge over Carson River west of Fallon.
	7	Churchill	2	B	1,000.00	993.62	6.38	Repair of Newpass Canyon, Route 2.
	8-9	Churchill	2	C	1,475.00	456.26	1,018.74	Building culverts, Eight- and Four-Mile Flats, Fallon Sink.
31	30	Churchill	2	C	800.00	214.30	585.70	Grading, Eastgate to mouth of Newpass Canyon.
16-26	30	Churchill	2	D	200.00	157.00	44.00	Grading, Eastgate to Alpine Ranch, Route 2.
15	15	Churchill	2	E	300.00	51.53	248.47	Grading, Fairview forks to Eastgate Ranch.
14	14	Churchill	2	E	1,000.00	841.89	158.11	Grading, Salt Wells to Fairview road, Route 2.
13	13	Churchill	2	B	300.00	299.08	0.92	Grading, Fallon to Salt Wells.
12	12	Churchill	2	B	500.00	488.10	21.90	Grading, Leeeteville to Fallon.
24	24	Douglas	3	A	500.00	488.58	11.42	Grading, west county line to Leeeteville.
9	9	Elko	3	D	500.00	130.00	370.00	Grading, cultvert material.
10	10	Elko	3	B	500.00	72.00	428.00	Grading and dragging; Elko to Halleck.
11	11	Elko	3	D	500.00	51.95	448.05	Grading and dragging; Halleck to Death.
25-27	20	Elko	3	C	800.00	60.00	740.00	Grading and dragging; Death to Wells.
		Esmeralda	3	C	1,500.00	1,385.19	114.81	Grading and dragging; Tonopah to Goldfield.
	5-10	Esmeralda	3	E	500.00	496.75	3.25	Grading and dragging; Crow Springs to county line.
18	18	Eureka	2	A	300.00	157.40	142.60	Grading and dragging of Boulder Flat.
5	5	Humboldt	2	C	400.00	54.08	345.92	Grading and dragging; Eureka to White Pine County line.
6	6	Humboldt	1	A	1,000.00	274.73	725.27	Grading and dragging; Churchill County line to Toulon.
7	7	Humboldt	1	B	1,200.00	318.85	881.15	Grading and dragging; Toulon to Lovelock.
8	8	Humboldt	1	H	400.00	12.55	387.45	Grading and dragging; Golconda to Stone House Station.
17	17	Humboldt	2	A	500.00	16.60	483.40	Grading and dragging; Stone House Station to county line.
	4-9	Lander	2	A	400.00	398.90	0.10	Grading and dragging; Mount Airy to west county line.
35	3	Lyon	1	A	325.00	288.61	36.39	Graveling sections of Boulder Flat.
29	29	Lyon	1	A	1,700.00	999.61	700.39	Grading and dragging; from county line to Leeete.
21	21	Lyon	2	A	1,000.00	3.00	997.00	Grading and dragging; county line to Leeete.
22	22	Nye	4	D	600.00	60.90	539.10	Grading and dragging; road junction to east county line.
23	23	Nye	4	A-1	1,500.00	746.56	753.44	Grading and dragging; Nye to forest boundary.
1	1	Ormsby	3	B	600.00	560.79	39.21	Grading and dragging; Tonopah to forest boundary.
2	2	Washoe	3	B	1,900.00	1,814.77	85.23	Grading and widening; Kings Canyon grade.
3	3	Washoe	1	B	300.00	32.00	268.00	Grading and dragging; Reno to Vista.
28-34	2	Washoe	1	C	500.00	244.00	256.00	Grading and dragging; Vista to Clark's Station.
32	32	Washoe	1	D	800.00	101.52	698.48	Grading and dragging; Clark's Station to east county line.
33	33	Washoe	3	A	1,123.71	576.29	547.42	Graveling worst sections to east county line.
19	19	White Pine	3	A	1,450.00	1,426.52	23.48	Grading and dragging; Lakeview to junction of roads.
			3	A	425.00	402.32	22.68	Grading and dragging; Pedrol ranch to junction of roads.
			3	A	700.00	696.96	3.04	Grading, west side of Virginia and Truckee Railway tracks through Steamboat.
			2	A	1,000.00	25.88	974.12	Grading and dragging; county line to Hamilton road forks.
Grand totals.					\$29,976.00	\$16,566.54	\$13,378.46	

DIVISION OF ACCOUNTS

Considerable thought was given to the matter of an accounting system for the department, and the system as worked out and finally adopted meets the following essential requirements of a reliable cost-accounting system:

1. Reliability, in the securing of dependable cost data and the safeguarding of the expenditures of the department.
2. Flexibility, being sufficiently elastic to provide for the recording of all classes of work which may be undertaken by the department.
3. Simplicity, with a minimum of forms and effort.
4. Immediate, by which is meant that the data compiled is susceptible of immediate analysis to make provision for the economic progress of the work; and
5. Relatively inexpensive.

The law creating the Department of Highways designated certain highway routes and gave each route a number. For the purpose of cost accounting, and the compiling of all other data, these numbered routes have been subdivided by counties, route number and alphabetically designated section. Route No. 1 extends from the east state line near Montello to the west state line near Verdi; Route No. 2 from the east state line near Ibapah to the junction with Route No. 1 near Wadsworth; Route No. 3 from Reno to Goldfield and to the California line near Lida by way of Carson City, Minden, Yerington, etc.; and Route No. 4 from Tonopah to Ely. In following out the system of designation, the sections by counties were given a letter of the alphabet beginning in each county with either the west or south county boundary. Thus, on the Reno-Carson City road, which is on Route 3, running north and south, the first section north of the south Washoe County line was designated as Section "A," the next section as Section "B," and so on. The full written designation of Section "A" would thus be "Washoe 3-A," which definitely fixes its location as that part of Route 3 in Washoe County extending from the south county boundary to the beginning of Section "B." In following out the system, all sections of the four state highway routes were definitely determined upon and a tabulation of the routes by sections prepared. The lengths of the sections generally were made to correspond to the size of future contracts or construction units; however, if for any reason a further subdivision is desired, a subnumber is used; thus, if only a portion of "Washoe 3-A" is let by contract or otherwise handled as a separate unit, it is designated as "Washoe 3-A-1," and these numbers continued for additional units to any number required. The name of the county is abbreviated, thus the designation "Humb. 1-C" can mean but one section of our State Highway System, and by reference to the section table it is found that "Humboldt 1-C" is that portion of Route 1 located between Lovelock and Zola in Humboldt County.

All surveys, plans, estimates, specifications, etc., are prepared and contracts let in accordance with this system of designation, thus providing absolute uniformity throughout all phases of the work of the department.

On maintenance work the same scheme was followed out and the expenditures classified under five heads only, viz: R.S., G.R., G.E., D., and G.D. Briefly they signify:

R.S.—Road surface, such as graveling, etc.

G.R.—Guard rails or anything for the safety of traffic.

G.E.—Grading and excavation, such as widening road.

D.—Any charge pertaining to drainage, such as repairs of bridges.

G.D.—Operation of road grader and drag.

On this maintenance work a District Engineer or Road Superintendent was placed in charge of a route, or a designated portion of a route, and a system of budget allotment inaugurated by means of which he was authorized to expend a certain sum for a certain class of work on a designated section of the State Highway System. Thus the District Engineer in charge of Route 1 may have been granted an authorization



Loading gravel for State Highway maintenance.

of, say, \$500 for the grading and dragging and general repair of "Humboldt 1-C." The charges against this work then would appear in the cost record as "General Authorization No....., Humb. 1-C, G.D.," which definitely and without doubt fixes the expenditure.

A general purchase-order system was inaugurated at the organization of the department. Under this system all purchases are made by means of these orders signed by the State Highway Engineer. The procedure is the submitting of a request for authority to purchase, usually called the "Requisition," which is approved by the Highway Engineer. The purchase order is then issued and a copy furnished to the employee who

submitted the requisition. On receipt of the supplies ordered, such employee immediately submits a "Receiving Record" upon which he recommends for approval the invoice covering the purchase. The purchase orders are numbered serially, and the number appears on the requisition, the receiving record, the invoice, and the final state claim by which the invoice is paid.

Construction reports are made daily by the engineer on the job in order that we may know the progress of the work and the actual cost of our contract jobs.

Progress and final payments to contractors are initiated by the resident engineer on the project, and after approval at the headquarters office are submitted to the State Board of Examiners for payment, and to the Federal Government for reimbursement to this State of their share of the cost of construction.

The following pages give a brief summary of the classification of the accounts of the department and the order in which they appear in the records:

GENERAL ADMINISTRATION—

- Salaries—Directors.
- Salaries—Highway Engineer.
- Salaries—Secretary.
- Salaries—General Office.
- Salaries—General Engineering.
- Salaries—Special Work (such as State Road Map).
- Office Expenses (Segregated).
- Travel Expenses (Segregated).
- General Operating Expenses (Classified).

COUNTY ROUTE AND SECTION (each unit of work)—

Surveys—

- Salaries—General Reconnaissance, Field.
- Salaries—Surveys, Field.
- Subsistence Expenses (Classified).
- Travel Expenses (Classified).
- Supplies (Classified).

Plans and Estimates—

- Salaries—Drafting Department.
- Supplies—Drafting Department.
- Travel Expenses (Classified).

Rights of Way—

- Salaries—Drafting Department.
- Salaries—General Field Work.
- Travel Expenses (Classified).
- Legal Expenses (such as cost of condemnation suits).
- Acquisition of Rights of Way (purchase outright).
- Other Expenses (Classified).

Contracts—

- Advertisements.
- Progress Payments.
- Final Payment (acceptance of work ; division of cost between State, County and Federal Government).

MAINTENANCE—

- Classified accounts under the patrol system.

In conclusion we wish to state that the system as a whole has proven very satisfactory, and it is thought that the various counties of the State which have not made adequate provision for road-and-bridge accounting, may profitably adopt a similar scheme of accounting. The facilities of this department are at all times at their disposal for the furtherance of this work.



Type of road drag used in Nye County to remove "corduroy" in wheel-tracks of natural desert roads.

ALLOTMENT OF FUNDS TO THE STATE OF NEVADA BY THE FEDERAL GOVERNMENT

The Federal Aid Road Act Except Section 8—

Fiscal Year ending June 30, 1917	\$64,898.30
Fiscal Year ending June 30, 1918	128,796.60
Fiscal Year ending June 30, 1919	193,229.82
Fiscal Year ending June 30, 1920	257,173.38
Fiscal Year ending June 30, 1921	321,571.68

Total \$965,169.78

The Federal Aid Road Act, Section 8—

Period of 10 years at \$19,000 per year \$190,000.00

Grand total under present Federal Aid Act \$1,155,169.78

TABLE

Showing Cash Balance in State Highway Fund on December 31, 1918, together
with Estimated Amount of Receipts up to July 1, 1919

Source of funds	Cash on hand on December 31, 1918	Approximate amounts due to July 1, 1919	Probable total receipts to July 1, 1919, State Highway Fund
Cash forward from 1918	\$187,308.92		\$187,308.92
1918 property tax		\$187,603.88	137,603.88
Auto license fees		32,000.00	32,000.00
State racing commission		5,000.00	5,000.00
Totals	\$187,308.92	\$174,603.88	\$361,912.80

TABLE

Showing Amounts in County-State Highway Funds of All Counties on December
31, 1918, together with Balance Due on 1918 Tax Levy, Giving Probable
Cash on Hand in Each Fund on July 1, 1919.

County	1917 tax receipts	1918 tax receipts	Total cash on hand December 31, 1918	Due on second pay- ment, due June 1, 1919	Grand total of fund July 1, 1919
Churchill	\$5,259.02	\$51.45	\$5,310.47	\$9,378.95	\$14,689.42
Douglas	2,087.07	1,741.88	3,778.95	1,729.20	5,508.15
Elko	24,309.07	98.69	24,407.76	39,798.63	64,194.39
Esmeralda	2,696.18	55.06	2,750.26	5,648.25	8,398.51
Eureka	4,020.37	3,477.81	7,498.18	3,130.04	10,628.22
Humboldt	18,425.54	15,925.60	34,351.14	14,455.22	48,806.36
Lander	3,746.58		3,746.58	6,274.95	10,021.53
Lyon	5,730.83	5,050.08	10,780.86	4,891.39	15,672.25
Mineral	3,052.25	2,586.75	5,639.00	2,245.48	7,884.48
Nye	6,390.38	5,958.30	12,338.68	5,243.30	17,581.98
Ormsby	1,065.23	969.61	2,084.84	780.04	2,814.88
Washoe	19,366.09	18,479.08	37,845.12	14,014.27	51,859.39
White Pine	13,733.73	1,118.58	14,852.31	17,423.06	32,275.37
Totals	\$109,821.34	\$55,512.81	\$165,334.15	\$125,000.78	\$290,334.93

RECEIPTS—STATE HIGHWAY FUND

Biennial Period of 1917–1918

Legislative appropriation	\$40,000.00
Automobile license fees	63,851.10
State Racing Commission	17,024.99
Property tax, 1917	111,585.52
Proceeds of mines tax, 1917	8,965.02
Miscellaneous refunds	195.16
Property tax, 1918*	56,523.99
Proceeds of mines tax, 1918*	3,955.80

Total receipts \$302,121.58

*NOTE—This includes only portion of first installment of the 1918 tax levy which was due on December 1, 1918.

TOTAL EXPENDITURES

May 1, 1917, to December 31, 1918

General administration	\$32,741.67
State road map	775.43
Surveys and plans	35,086.76
Rights of way	1,216.56
Military information	1,896.86
Equipment	23,860.13
Maintenance	16,596.54
Total	\$112,123.44

SEGREGATED EXPENDITURES**General Administration**

<i>Salaries—</i>	
Directors	\$4,890.00
State Highway Engineer	6,333.33
Assistant State Highway Engineer	1,727.50
Office Engineer	1,137.50
Secretary	300.00
Clerical and stenographic	3,849.78
Unsegregated office and drafting	1,696.44
Leave of absence, vacations, etc.	726.84
Salaries, Sundays and holidays	1,127.63
Total salaries	\$21,699.02
<i>Operation—</i>	
Fuel and light	\$210.19
Freight and express	104.76
Office supplies	1,043.67
Drafting-room supplies	912.22
Telephone and telegraph	638.48
Postage	283.00
Railway transportation	1,069.15
Travel expenses	1,357.41
Automobile operation and repairs	4,289.27
Automobile hire	368.00
Advertisements for bids	294.07
General advertising	15.60
Annual dues associations	50.00
Industrial insurance premiums	80.58
Property insurance premiums	263.75
Bond premiums	162.50
Total	\$11,072.65
Grand Total Administration	\$32,741.67

State Road Map

Salaries	\$720.00
Travel expense	6.60
Supplies and prints	48.83
Total	\$775.43

Surveys and Plans

Actual surveys including salaries, subsistence, transportation, etc.	\$26,367.21
Layout plans, exclusive of rights of way and bridges	5,223.53
Bridge plans	439.32
Right-of-way deeds, plats and descriptions	977.50
Testing materials	28.30
Total	\$35,086.76

Rights of Way

Expenses in connection with condemnation suits	\$180.37
Paid for land	663.04
Abstracts	75.00
Fencing materials and labor	298.15
Total	\$1,216.56

Military Information

Salaries	\$1,173.47
Expenses of field men	649.22
Supplies	73.66
Total	\$1,896.35

Equipment

Heating plant of office	\$2,104.05
Office furniture and fixtures	2,023.48
Drafting-room equipment	755.70
Engineering field equipment	995.42
Automobiles and additional equipment	4,412.40
Maintenance equipment trucks, etc.	13,538.03
Library	26.06
Total	\$23,860.13

DETAILS OF SURVEYS AND PLANS

Counties	Route.....	Section	From—	To—	Miles line run	Miles final location made	Miles plans complete	Total cost surveys	Cost per mile final location	Total cost plans and estimates	Cost per mile
Washoe	3	A	Lakeview Summit.	Huffakers	36.9	19.8	9.32	\$4,711.39	\$237.96	\$747.73	\$30.23
Washoe	3	B	Huffakers	Reno	7.96	5.3	4.00	616.69	116.15	296.91	74.23
Ormsby	3	C	Lakeview Summit.	Carson City	2.84	0.72	0.37	318.09	441.79	36.29	98.08
Douglas	3	C-1	North of Minden		1.8	1.8	1.8	106.24	58.47	47.35	26.30
Douglas	3	B	Mountain House	Carter's Station	7.44	7.1	4.0	869.10	121.00	235.33	58.83
Lyon	3	C	Wilson	Hudson-Aurora Road	20.10	6.89	6.89	2,672.90	387.94	1,225.90	177.84
Mineral	3	E	Cottonwood Creek	Schurz	11.78	10.7	0.0	2,907.97	271.77		
Esmeralda	3	C	Goldfield	Tonopah	23.2	23.2	8.93	1,142.67	49.25	266.40	29.83
Nye	4	A-1	Tonopah	Toiyabe National Forest	17.72	17.72	14.76	1,184.62	66.86	254.17	17.24
Churchill	3	B	Leeterville	Fallon	9.25	8.12	7.62	840.30	103.49	592.00	77.69
White Pine	2	C	Robinson's Summit	Keystone	13.88	13.88	12.46	2,869.28	208.72	386.86	30.97
Humboldt	1	A	Lovelock	Zola	18.36	18.36	16.88	1,506.27	82.03	612.81	36.71
Lander	1	A	West County Line	East County Line	46.40	46.40	5.00	2,579.76	56.62	163.41	30.68
Eureka	1	A	West County Line	East County Line	32.10	32.10		2,764.34	86.80		
Elko	1	A	West County Line	Elko	31.00	31.00	18.73	3,209.13	103.62	627.60	33.51
Total costs and average cost per mile.....					279.71	242.08	110.75	\$28,275.64	\$116.80	\$5,471.16	\$49.40
					279.71 miles of surveyed line			\$28,275.64			\$101.09

CONDENSED INVENTORY OF SUPPLIES AND EQUIPMENT

<i>Classification</i>	<i>No.</i>	<i>Cost price</i>	<i>Inventory value Dec. 31, 1918</i>
OFFICE FURNITURE AND EQUIPMENT—			
Adding machine, Burroughs.....	1	\$294.00	\$240.60
Blue-printing equipment.....	1	68.41	54.19
Blue-printing car and attachments.....	1	58.00	47.66
Office desks.....	4	185.60	152.13
Office tables.....	2	22.00	16.55
Office tables, drafting.....	6	163.96	131.25
Office chairs and stools.....	17	139.42	99.57
Office safe, fireproof.....	1	350.50	328.60
Typewriters.....	3	244.41	170.02
Bookcases (sections).....	8	48.95	43.60
Steel filing-cases.....	3	144.96	129.80
Wood-filing cabinets.....	4	94.43	73.79
Office fixtures (lighting, rugs, etc.).....	1	206.95	139.95
Mimeographs.....	1	31.86	24.41
Drafting-room small tools.....	1	87.83	69.28
Sample-testing equipment.....	1	29.09	25.75
Miscellaneous office equipment.....	1	106.46	72.40
Office supplies on hand.....	1	400.00	400.00
Totals.....		\$2,277.23	\$2,219.54
ENGINEERING FIELD EQUIPMENT—			
Transits.....	3	\$657.25	\$546.52
Hand levels.....	6	30.10	17.93
Level rods and line poles.....	8	39.22	22.60
Tapes, plumbbobs, etc.....	1	112.19	64.97
Tents and camp equipment.....	1	279.78	142.44
Totals.....		\$1,118.54	\$794.36
AUTOMOBILES—			
Cadillac 8, No. 1.....	1	\$2,390.00	\$1,615.39
Chevrolet Touring, No. 2.....	1	625.00	434.04
Buick Touring, No. 3.....	1	795.00	552.20
Ford Touring, No. 5.....	1	481.85	334.56
Totals.....		\$4,291.85	\$2,936.19
ROAD BUILDING MACHINERY—			
Ford 1-ton trucks, Nos. 4, 6, 8.....	3	\$2,716.00	\$2,564.98
White 5-ton truck, No. 7, "Good Roads".....	1	7,000.00	6,611.14
Fordson tractors, Nos. 9 and 10.....	2	2,020.86	1,946.04
Fresnos and plows.....	3	114.65	100.65
Road drags and planers.....	7	425.00	401.45
Tool boxes.....	12	315.52	296.00
Scarifiers.....	1	356.54	351.14
Padlocks, etc.....	1	32.51	30.00
Maintenance house.....	1	163.43	168.43
Totals.....		\$13,144.51	\$12,468.83
Grand totals.....		\$20,832.13	\$18,413.92

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STATE OF NEVADA

BIENNIAL REPORT

OF THE

Fish and Game Commission

1917=1918

J. P. O'BRIEN,
M. P. MACMILLAN,
O. W. TENNANT,
Board of Fish and Game Commissioners



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : : : JOE FARNSWORTH, SUPERINTENDENT

1919



LETTER OF TRANSMITTAL

HON. EMMET D. BOYLE, *Governor of Nevada.*

SIR: We have the honor to submit herewith for your consideration the report of the Fish and Game Commission for the years 1917-1918.

J. P. O'BRIEN,
M. P. MACMILLAN,
O. W. TENNANT.

Board of Fish and Game Commissioners.

REPORT OF FISH AND GAME COMMISSION

INTRODUCTION

The activities of the Fish and Game Commission may be briefly summarized as follows: To provide for the establishment of fish hatcheries or the use of private lakes, ponds or streams for the propagation and breeding of fish; the taking or purchase of ova or spawn; the distribution of fry in such streams, rivers and lakes of the State as are deemed suited to the habits and successful culture of such fish; the employment of persons skilled in fish-breeding to accomplish the above purpose.

The only state hatchery thus far erected is at Verdi, on the Truckee River, where the principal efforts of the Fish and Game Commission are concentrated. Through the courtesy of the Virginia and Gold Hill Water Company, the Commission has had the use of Marlette Lake for the propagation and breeding of trout. The company has not only granted the privilege of using the waters of this lake, but has prohibited fishing there, instructing their caretaker to enforce this prohibition.

The equipment of the White Pine Hatchery, which has been in the care of Mr. A. C. Powell, is also available to the Commission for the hatching of trout eggs. The eggs hatched and reared there are subsequently planted in the streams of White Pine County by the Warden without expense to the State.

VERDI HATCHERY

As far as limited appropriations permitted, needed improvements have been made in the buildings at the Verdi Hatchery. However, funds could not be spared for the installation of concrete floors in the hatchery proper. The supports have practically rotted out from under the hatchery floor, and it is very doubtful if it will stand the weight of the hatching troughs when filled with water longer than the present season. The Commission is therefore moved to renew its recommendation of two years ago for a special appropriation for the purpose of replacing the present wooden floor with one of concrete at a lower level, which will not only afford better aeration of the water supplied the eggs and fry, but will in addition permit the conservation of water by the use of double batteries of troughs. The cost of this improvement has been estimated to be \$1,000.

The present water supply of the Verdi Hatchery is inadequate and must be added to in order to secure the best results from the station. During the year of 1917 Mr. F. O. Broili, of the Public Service Commission, made a survey of a proposed dam and pipe-line to supplement the present supply, and submitted an estimate of the cost, but owing to the limited amount of funds this project was abandoned.

For an expenditure of \$5,000 the water of Sproule Creek can be piped to the hatchery, thus securing an adequate supply of water the year round of a proper temperature for the successful breeding of fish.

EYEING STATION

The proper incubation of Eastern Brook trout requires water of a relatively cold temperature. The extreme care necessary in the

proper development of spawn of this variety of fish suggests the advisability of establishing a site near the spawning grounds for eyeing Eastern Brook trout spawn. An outlay of \$1,000 for an eyeing station would be returned many fold in increased yield of eyed spawn and the subsequent of stronger fry. Recommendation is therefore respectfully made that provision for such a station be included in the appropriation for the support of the Commission for the next biennium.

FIELD OPERATIONS, 1917

The Rainbow station at the Bates Dam below Verdi was operated from March 24 to April 27, 1917, resulting in the very light take of spawn, due to the low run of Rainbow at this station. The Rainbow spawning station at the Reno Electric Light Dam, above Reno, was placed in operation on March 26, 1917, with Mr. O. B. Lomax in charge, and continued in operation until May 9, 1917, when the station was closed down. The run of fish at this station was above the average, resulting in a take of 200,000 eggs. The Derby Dam station for the taking of Black-spotted eggs was operated by Mr. C. Berbeck whenever it was possible to catch any fish. Very few fish reached the station during the spawning season, due to the obstruction of the river by the construction of a new dam in the Pyramid Indian Reservation. We operated at the new dam in the Pyramid Indian Reservation at two different times, in an effort to take spawn from the run of Black-spotted, known as "Tommies." The run was very poor, and the fish very green at the time they were taken—only about one in fifteen being ready for spawning. An effort was made to keep these fish alive in boxes until ripe enough to spawn, but owing to the number of leaches in the river at this station, all of the fish died within a few days after being placed in the boxes. The total take of Black-spotted was only 200,000.

The Marlette Lake station for the take of Eastern Brook spawn was operated during October and November, 1917, yielding 850,000 eggs, which were transported to the Verdi Hatchery. The relatively high temperature of the water at the hatchery led to a too rapid development of this spawn, resulting in a high percentage of egg loss and a large amount of deformed fish. Approximately 70 per cent of the eggs taken were hatched.

FIELD OPERATIONS, 1918

Field operations for the taking of Black-spotted trout eggs at the Pyramid Lake Reservation at Numana were begun in February and continued until the end of March, resulting in a take of 1,104,000 eggs, which were taken at various times to the Verdi Hatchery for hatching and rearing—a yield of 91 per cent being obtained from these eggs. During March, April, and May of 1918, Rainbow trout spawn were taken at the Bates Dam, and at the field station of the Reno Electric Light Company's Dam, the take amounting to 201,000 eggs. The field station for taking Rainbow and Native Cut-Throat trout eggs was operated in the Carson River at the head of the Carson Valley, but the run of fish was so small that it was impossible to accomplish any results.

In October and November, 1918, a total of 1,055,000 Eastern Brook trout eggs were taken to the Verdi Hatchery from the Marlette Lake and Hobart Creek reservoirs.

On May 26, 1918, 50,000 Rainbow trout eggs were received from the United States Bureau of Fisheries. The fry reared from these eggs were all planted in the Truckee River.

The possibility of taking spawn at the Squaw River Dam was investigated by Superintendent Jas. H. Vogt, of the Verdi Hatchery, in company with Mr. E. L. Bachman, Fish and Game Warden of Elko County. Mr. Vogt recommends that the investigation be again taken up during the spring run of the fish, as the reservoir gives promise of being a source of supply of our native type of trout.

The lack of proper living quarters and equipment at the Marlette Lake field station has hampered the work of the Commission considerably. Severely cold weather usually prevails at this station during the time of taking spawn, and the shack, which is now used for living quarters, affords little or no shelter, and is a menace to the health of the operators.

The following summary shows the most favorable spawn take for several years:

March 15 to May 9, 1917—Rainbow.....	200,000
April 11 to June 2, 1917—Black-spotted.....	200,000
October 14 to November 26, 1917—Eastern brook.....	850,000
February 18 to March 21, 1918—Black-spotted.....	1,104,000
March 17 to April 12, 1918—Rainbow.....	201,000
October 21 to November 25, 1918—Eastern brook.....	1,055,000
Total	3,610,000

DISTRIBUTION OF FRY

Complete detail of the fry distributed during the summers of 1917 and 1918 appears in the tables appended to this report.

Free transportation of the distributing agent, who is required to accompany each shipment of fry, was discontinued January 1, 1918, by order of the Director-General of the U. S. R. R. Administration, increasing the expense of the work to a considerable extent when limited funds at the disposal of the Commission were needed.

RECOMMENDATIONS

We respectfully submit for the earnest consideration of the Legislature recommendations as follows:

1. An appropriation of \$15,000 for the current expenses of the years 1919 and 1920.
2. An appropriation of \$1,000 for the construction of a frame building at Marlette Lake, to house four men and for the storage of tools.
3. An appropriation of \$1,000 for a cement floor and \$400 for painting the building of the Verdi Hatchery.
4. Provision for the erection of an eyeing station at a cost not to exceed \$1,000.
5. For the purchase of spawn of rainbow and other trout, \$900.
6. Supplementing present water supply by pipe-line to Sproule Creek, at a cost not to exceed \$5,000.

TRUCKEE POLLUTION

The Commission is pleased to report that a solution of the long-drawn-out fight over the pollution of the Truckee River by the paper

mill at Floriston is in sight. The improvement early promised in the condition of the principal fishing stream of the State will make Nevada the Mecca of fishermen.

SEGREGATION OF EXPENSES

<i>1917</i>	
Salaries and wages.....	\$3,201.95
Fish food.....	546.42
Commissioners' expenses.....	389.20
Superintendent's expenses.....	340.02
General expenses.....	1,124.62
Purchase of spawn.....	200.00
Purchase of Ford truck.....	800.00
	<u>\$6,602.21</u>
<i>1918</i>	
Salaries and wages.....	\$3,233.50
Fish food.....	704.16
Commissioners' expenses.....	69.97
Superintendent's transportation and general expenses.....	871.87
General expenses.....	981.97
Purchase of cow.....	150.00
	<u>6,011.47</u>
Total expenditures.....	<u>\$12,613.68</u>
<i>1917-1918</i>	
Appropriation	\$12,000.00
Appropriation overdrawn.....	205.68
Deficiency	348.00
	<u>\$12,613.68</u>

IN MEMORIAM

This report would be incomplete without tribute to the memory of Hon. J. E. Mack, who assiduously gave his time and best effort to the work of the Commission until January 13, 1918, when he answered the last call; and to Mr. A. Frevert, who voluntarily left the services of the Commission in 1918 to enlist in the Nation's service, and who fell on the field of battle in France, fighting in the cause of God and Humanity.

TABULAR STATEMENTS

Showing Distribution of Fish Fry for the Years 1917 and 1918

TROUT DISTRIBUTION, 1917

Date	From railroad station	County	Waters stocked	Consignee	Miles by railroad.	Miles by wagon	Hours in transit	Condition when received	Condition when planted	Loss when placed	Number of fry in shipment	Variety
June 26	Bates Dam	Washoe	Truckee River	Nev. Fish & Game Com.	0	3	2	Good	Good	0	12,900	Rainbow
June 28	Reno	Washoe	Truckee River	Nev. Fish & Game Com.	0	12	4	Good	Good	5	10,000	Rainbow
June 29	Lawton	Washoe	Truckee River	Nev. Fish & Game Com.	0	6	2	Good	Good	4	10,000	Rainbow
June 29	Mogul	Washoe	Truckee River	Nev. Fish & Game Com.	0	5	1	Good	Good	0	8,000	Rainbow
June 30	Country Club	Washoe	Truckee River	Nev. Fish & Game Com.	0	2	1	Good	Good	1	6,000	Rainbow
June 30	Verdi	Washoe	Truckee River	Nev. Fish & Game Com.	0	0	0	Good	Good	0	1,687	Rainbow
July 1	Ely	White Pine	Various streams	A. C. Powell	556	2	27	Good	Good	57	30,000	Eastern brook
July 8	Golconda	Humboldt	Colliard Creek	Gil Prida	202			Good	Good		7,500	Eastern brook
July 8	Golconda	Humboldt	Kelly Creek	Fred St. Clair	202	43	18	Fine	Fine	0	7,500	Eastern brook
July 8	Golconda	Humboldt	Jake Creek	Fred St. Clair	202	38	16	Fine	Fine	0	7,500	Eastern brook
July 8	Golconda	Humboldt	Rock Creek	Fred St. Clair	202	10	14	Good	Good	2	7,500	Eastern brook
July 10	Death	Elko	Boulder Creek	Vernon Metcalf	353	6	17	Good	Good	0	7,500	Eastern brook
July 10	Death	Elko	Soldier Creek	Vernon Metcalf	353	23	19	Good	Good	0	7,500	Eastern brook
July 10	Death	Elko	Secret Creek	Vernon Metcalf	353	18	18	Good	Good	0	7,500	Eastern brook
July 13	Winnemucca	Humboldt	Cottonwood Creek	Chas. Byrnes	185	45	16	Good	Good	0	7,500	Eastern brook
July 13	Winnemucca	Humboldt	Provo Creek	Chas. Byrnes	185	45	16	Good	Good	0	7,500	Eastern brook
July 13	Winnemucca	Humboldt	Martin Creek	F. B. Stewart	185	80	15	Good	Good	4	7,500	Eastern brook
July 13	Winnemucca	Humboldt	Rabel Creek	F. Whitaker	185	53	27	Good	Good	10	7,500	Eastern brook
July 17	Elko	Elko	Pie Creek	Wellington Weiland	324	38	17	Good	Good	3	7,500	Rainbow
July 17	Elko	Elko	Jack Creek	W. P. Young	324	70	22	Good	Good	3	7,500	Eastern brook
July 17	Elko	Elko	Taylor Creek	W. P. Young	324	50	21	Good	Good	2	7,500	Eastern brook
July 17	Elko	Elko	Gang Creek	Warner Griswold	324			Good	Good		7,500	Eastern brook
July 19	Fallon	Churchill	Edwards Creek	W. A. Kiddle	72	88	17	Good	Good	3	7,500	Eastern brook
July 19	Fallon	Churchill	Smiths Creek	W. A. Kiddle	72	88	17	Good	Good	3	7,500	Eastern brook
July 21	Elko	Elko	Cold Creek	L. F. Simonsen	324			Good	Good		7,500	Black-spotted
July 21	Elko	Elko	Talbot Creek	Ed. B. Lytton	324	20	18	Good	Good	4	7,500	Eastern brook
July 21	Elko	Elko	Doney Creek	C. H. Prentice	324			Good	Good		7,500	Eastern brook
July 21	Elko	Elko	Rabbit Creek	O. A. Fee	324			Good	Good		7,500	Eastern brook
July 21	Elko	Elko	Reservoir	T. J. Cretchley	324			Good	Good		7,500	Eastern brook
July 23	Imlay	Humboldt	Coyote Creek	N. C. Frensdren	152	18	11	Good	Good	0	5,000	Eastern brook
July 23	Mill City	Humboldt	Star Creek	Peter Organ	170	11	11	Good	Good	0	2,500	Eastern brook
July 23	Winnemucca	Humboldt	Thomas Creek	Geo. Farris	185	8	10	Good	Good	25	7,500	Eastern brook
July 23	Winnemucca	Humboldt	Sanoma Creek	Geo. Farris	185	14	11	Good	Good	1	7,500	Eastern brook
July 23	Winnemucca	Humboldt	Jackson Creek	A. T. Lay	185	20	13	Good	Good	12	7,500	Eastern brook
July 23	Winnemucca	Humboldt	Willow Creek	A. T. Lay	185	65	16	Good	Good	15	5,000	Eastern brook
July 23	Winnemucca	Humboldt	Italian Creek	A. T. Lay	185	90	16	Good	Good	5	2,500	Eastern brook
July 23	Austin	Lander	Big Creek	H. A. Kearns	337	14	18	Good	Good	0	7,500	Black-spotted
July 23	Austin	Lander	Big Creek	Pete Arena Company	337	15	19	Good	Good	0	7,500	Eastern brook
July 23	Austin	Lander	Big Creek	Fred Pohl	337	12	21	Good	Good	0	5,000	Eastern brook
July 23	Austin	Lander	Big Creek	Fred Pohl	337	12	21	Good	Good	0	2,500	Black-spotted

July 27.	Austin	Lander	Skull Creek	D. J. Shea	337	30	21	Good	Good	0	5,000	Eastern brook
July 27.	Austin	Lander	Skull Creek	D. J. Shea	337	30	21	Good	Good	0	5,000	Black-spotted
July 31.	Franktown	Washoe	China Camp Creek	W. F. Sauer	28	16	12	Good	Good	25	7,500	Eastern brook
July 31.	Franktown	Washoe	Tahoe Meadow Creek	W. F. Sauer	28	9	12	Good	Good	25	7,500	Eastern brook
July 31.	Franktown	Washoe	South Brown Creek	W. F. Sauer	28	14	14	Good	Good	50	7,500	Eastern brook
July 31.	Franktown	Washoe	West Galena Creek	W. F. Sauer	28	12	14	Good	Good	50	7,500	Eastern brook
Aug. 3.	Austin	Lander	Kingston Creek	Frank Mendocia	337			Good	Good		5,000	Eastern brook
Aug. 3.	Austin	Lander	Kingston Creek	Frank Mendocia	337			Good	Good		5,000	Black-spotted
Aug. 3.	Austin	Lander	sees River	John Wholey	337	40	22	Good	Good	0	7,500	Eastern brook
Aug. 3.	Austin	Lander	Tar Creek	Manuel Aberasturi	337	30	19	Good	Good	0	5,000	Eastern brook
Aug. 3.	Austin	Lander	Boone Creek	Geo. W. Linder	337	20	13	Fine	Good	Few	5,000	Eastern brook
Aug. 3.	Austin	Lander	Boone Creek	Geo. W. Linder	337	20	13	Fine	Good	Few	5,000	Black-spotted
Aug. 3.	Austin	Lander	Boone Creek	Geo. W. Linder	337	20	13	Fine	Good	Few	5,000	Eastern brook
Aug. 6.	Ely	White Pine	Various streams	A. C. Fowler	56	12	26	Good	Good		30,000	Eastern brook
Aug. 9.	Minden	Douglas	Carson River	J. A. Cardinal	57	12	9	Good	Good	25	10,000	Rainbow
Aug. 9.	Minden	Douglas	Carson River	J. A. Cardinal	57	12	9	Good	Good	25	10,000	Black-spotted
Aug. 9.	Minden	Douglas	Carson River	Geo. F. Dauberg	57	12	9	Good	Good	25	10,000	Rainbow
Aug. 9.	Minden	Douglas	Carson River	Geo. F. Dauberg	57	12	9	Good	Good	25	10,000	Black-spotted
Aug. 11.	Pallade	Eureka	Humboldt River	Earl Cobb	264	4	13	Good	Good	0	10,000	Black-spotted
Aug. 11.	Pallade	Eureka	Humboldt River	Earl Cobb	264	4	13	Good	Good	0	10,000	Rainbow
Aug. 11.	Beowawe	Eureka	Humboldt River	J. D. I. Swannaux	276	3	10	Good	Good	50	10,000	Black-spotted
Aug. 11.	Beowawe	Eureka	Humboldt River	J. D. I. Swannaux	276	3	10	Good	Good	50	10,000	Rainbow
Aug. 11.	Beowawe	Eureka	Humboldt River	Geo. N. Madden	276	51	13	Good	Good	5	2,500	Eastern brook
Aug. 14.	Winnemucca	Humboldt	Willow Creek	John White	185	65	13	Good	Good	25	7,500	Eastern brook
Aug. 14.	Winnemucca	Humboldt	Quinn River	Thomas Scott	185	90	19	Good	Poor	3,000	Eastern brook	
Aug. 14.	Winnemucca	Humboldt	Dead Horse Creek	Geo. Farlie	185	90	19	Good	Good		7,500	Eastern brook
Aug. 14.	Winnemucca	Humboldt	McMerritt Creek	R. H. Wilkerson	185	90	18	Good	Good	12	7,500	Eastern brook
Aug. 18.	Wells	Elko	Ten-Mile Creek	R. H. Wilkerson	185			Good	Good		10,000	Black-spotted
Aug. 18.	Wells	Elko	Bishop Creek Reservoir	Metropolis Land Co.	376	18	15	Good	Good	0	7,500	Eastern brook
Aug. 18.	Wells	Elko	Signal Creek	J. A. Ralph	376	11	16	Good	Good	0	7,500	Eastern brook
Aug. 18.	Wells	Elko	Dry Creek	J. A. Ralph	376	8	15	Good	Good	100	7,500	Eastern brook
Aug. 18.	Wells	Elko	Roberts Lake	J. A. Ralph	376	9	15	Good	Good	25	7,500	Eastern brook
Aug. 21.	Battle Mountain	Lander	Humboldt River	J. A. Blossom	244	15	11	Good	Good	8	7,000	Rainbow
Aug. 21.	Battle Mountain	Lander	Humboldt River	J. A. Blossom	244	3	11	Good	Good	10	7,000	Black-spotted
Aug. 21.	Battle Mountain	Lander	Rock Creek	A. G. McCallan	244	20	12	Good	Good	50	7,000	Black-spotted
Aug. 21.	Battle Mountain	Lander	Humboldt River	L. E. Kendrick	244	20	12	Good	Good	50	7,000	Rainbow
Aug. 21.	Armenta	Lander	Humboldt River	Frank Edis	256	4	12	Good	Good	25	7,000	Rainbow
Aug. 21.	Armenta	Lander	Humboldt River	Earl Danielson	256	2	12	Good	Good	0	7,500	Eastern brook
Aug. 24.	Carlin	Elko	Beaver Creek	Chas. B. Kappler	303	15	15	Good	Good	0	7,500	Eastern brook
Aug. 24.	Carlin	Elko	Coyote Creek	Chas. B. Kappler	303	15	15	Good	Good	0	7,500	Eastern brook
Aug. 24.	Carlin	Elko	Humboldt River	Chas. B. Kappler	303	6	13	Good	Good	25	10,000	Rainbow
Aug. 24.	Carlin	Elko	Aquarium	J. D. Huisigup	303	0	13	Good	Good	0	800	Eastern brook
Aug. 24.	Carlin	Elko	Marys Creek	James Griffen	303	12	15	Good	Good	0	7,500	Eastern brook
Aug. 28.	Carson City	Ormsby	State Reservoir	John E. Mack	42	3	6	Good	Good	0	5,000	Eastern brook
Aug. 28.	Carson City	Ormsby	State Reservoir	John E. Mack	42	3	6	Good	Good	0	5,000	Eastern brook
Aug. 28.	Carson City	Ormsby	State Reservoir	John E. Mack	42	3	6	Good	Good	0	5,000	Eastern brook
Aug. 28.	Carson City	Ormsby	State Reservoir	John E. Mack	42	3	6	Good	Good	0	5,000	Eastern brook
Aug. 28.	Lakeview	Ormsby	Storey Reservoir	Ne. Fish & Game Com.	38	15	11	Good	Good		2,500	Black-spotted
Aug. 28.	Lakeview	Ormsby	Mariette Lake	Ne. Fish & Game Com.	38	15	11	Good	Good		2,500	Eastern brook
Sept. 2	Battle Mountain	Lander	Trout Creek	St. Clair Moore	244	18	14	Good	Good	10	30,000	Eastern brook
Sept. 2	Battle Mountain	Lander	Mill Creek	Fred Ruffley	244	18	14	Good	Good	10	6,000	Eastern brook
Sept. 2	Halleck	Elko	Lamoille Creek	L. H. Rathjohn	345	17	15	Good	Good	25	7,500	Eastern brook
Sept. 2	Halleck	Elko	Secret Creek	Alex Gardner	345	17	15	Good	Good	25	7,500	Eastern brook
Sept. 7	Ravenswood	Lander	Hall Creek	John L'Ortolde	296	20	17	Good	Good	0	7,500	Eastern brook
Sept. 7	Ravenswood	Lander	Hall Creek	John L'Ortolde	296	20	17	Good	Good	0	7,500	Eastern brook
Sept. 7	Austin	Lander	San Juan Creek	George O'Toole	337	37	22	Good	Good	Few	7,500	Eastern brook

TROUT DISTRIBUTION, 1917—Continued

Date	From railroad station	County	Waters stocked	Consignee	Miles by railroad.	Miles by wagon	Hours in transit	Condition when received	Condition when planted	Loss when placed.	Number of fry in shipment	Variety
Sept. 7.	Austin	Lander	Cottonwood Creek	George O'Toole	337	35	23	Good	Good	Few	7,500	Eastern brook
Sept. 7.	Gerlach	Lander	Washington Creek	Barley O'Toole	337	30	23	Good	Good	Few	7,500	Eastern brook
Sept. 11.	Gerlach	Washoe	Red Mountain Creek	Oliver Iverson	279			Good	Good		5,000	Eastern brook
Sept. 11.	Gerlach	Washoe	Red Mountain Creek	Oliver Iverson	279			Good	Good		2,500	Rainbow
Sept. 11.	Gerlach	Washoe	Nigger Creek	J. E. Kelly	279			Good	Good		5,000	Eastern brook
Sept. 11.	Gerlach	Washoe	Nigger Creek	J. E. Kelly	279			Good	Good		2,500	Rainbow
Sept. 11.	Jungo	Humboldt	Big Creek	H. H. Alexander	220	30	16	Good	Good	50	5,000	Eastern brook
Sept. 11.	Jungo	Humboldt	Big Creek	H. H. Alexander	220	30	16	Good	Good	25	2,500	Rainbow
Sept. 14.	Tonopah	Nye	Pine Creek	L. E. Glass	254			Good	Good	10	5,000	Eastern brook
Sept. 14.	Tonopah	Nye	Barley Creek	L. E. Glass	254			Good	Good	5	2,500	Rainbow
Sept. 14.	Tonopah	Nye	Barley Creek	L. E. Glass	254			Good	Good		5,000	Eastern brook
Sept. 14.	Tonopah	Nye	Reese River	L. E. Glass	254			Good	Good		2,500	Rainbow
Sept. 14.	Tonopah	Nye	Reese River	L. E. Glass	254			Good	Good		5,000	Eastern brook
Sept. 14.	Tonopah	Nye	Shepley Creek	L. E. Glass	254			Good	Good		2,500	Rainbow
Sept. 14.	Tonopah	Nye	Shepley Creek	L. E. Glass	254			Good	Good		5,000	Eastern brook
Sept. 17.	Minden	Douglas	Carson River	Geo. F. Dangberg	57	14	8	Good	Good	2	25,000	Rainbow
Sept. 19.	Coaldale	Esmeralda	Chiatovich Creek	J. M. Chiatovich	214	28	16	Good	Good	22	7,500	Rainbow
Sept. 19.	Coaldale	Esmeralda	Indian Creek	D. H. McNett	214	30	16	Good	Good	85	7,500	Rainbow
Sept. 19.	Coaldale	Esmeralda	Perry Aiken Creek	David Patterson	214	35	15	Good	Good	31	7,500	Rainbow
Sept. 19.	Tonopah	Nye	Peavine Creek	L. E. Glass	254			Good	Good		7,500	Rainbow
Sept. 20.	Bates Dam	Washoe	Truckee River	Nev. Fish & Game Com.	0	3	1	Good	Good	0	2,000	Rainbow
Sept. 20.	Near Chiams	Washoe	Truckee River	Nev. Fish & Game Com.	0	10	3	Good	Good	0	2,500	Rainbow
Sept. 21.	Alturas	Washoe	Sand Creek	Melvorn W. Jones	192	45	28	Good	Good	15	7,500	Black-spotted Rainbow
Sept. 25.	Schurz	Mineral	Walker River and Lake	Nev. Fish & Game Com.	0	3	2	Good	Good	0	50,000	Rainbow
Sept. 25.	Lawtons	Washoe	Truckee River	Nev. Fish & Game Com.	0	6	2	Good	Good	0	25,000	Black-spotted Rainbow
Sept. 25.	Bates Dam	Washoe	Truckee River	Nev. Fish & Game Com.	122	6	13	Good	Good	25	40,000	Black-spotted Rainbow
Sept. 27.	Ely	White Pine	Various streams	A. C. Powell	556	2	25	Good	Good	40	18,000	Black-spotted Rainbow
Sept. 30.	Hudson	Lyon	Walker River	Nev. Fish & Game Com.	125	0	15	Good	Good	20	11,000	Black-spotted Rainbow
Sept. 30.	Hudson	Lyon	Walker River	Nev. Fish & Game Com.	125	0	15	Good	Good	30	25,000	Rainbow

*Applicants failed to receive fish and they were planted in branch of Feather River.

BLACK BASS DISTRIBUTION, 1917

Sept. 14..	Tonopah.....	Nye.....	Duckwater.....	L. E. Glass.....	254	18	14	Good	Poor	N.a.	100	Large-mouth
Sept. 19..	Coaldale.....	Emeralda.....	Moll Spring.....	D. H. McNett.....	214	3	50	Good	Good	0	100	Large-mouth
Oct. 25..	Las Vegas.....	Clark.....	Reservoir.....	J. Jackson.....	482			Good	Good	0	100	Large-mouth

GOLDFISH DISTRIBUTION, 1917

Oct. 25..	Las Vegas.....	Clark.....	Reservoir.....	Ira McFarland.....	438	2	46	Good	Good	6	40	Goldfish
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TROUT DISTRIBUTION, 1918

Date	From railroad station	County	Waters stocked	Consignee	Miles by railroad	Miles by wagon	Hours in transit	Condition when received	Condition when planted	Number dead when planted	Number of fry in shipment	Variety
Apr. 19	Ely	White Pine	County Hatchery	A. C. Powell	556			Good			150,000	B.-spotted, eggs
May 18	Gerlach	Washoe	Red Mountain Creek	Oliver Iverson	0			Good		4	7,000	Eastern brook
May 20	Hufakkers	Washoe	White Creek	J. W. Blum	16	7	5	Good			7,500	Eastern brook
May 23	Hufakkers	Washoe	Thomas Creek	J. W. Blum	16	1	5	Good			7,500	Eastern brook
May 23	Ely	White Pine	County Hatchery	A. C. Powell	556	8	23	Good		55	30,000	Eastern brook
June 6	R. E. Bridge	Ormsby	Carson River	Nev. Fish & Game Com.	48	0	6	Good		20	60,000	Black-spotted
June 7	Churchill	Lyon	Carson River	Nev. Fish & Game Com.	79	0	8	Good		30	60,000	Black-spotted
June 17	Schurz	Mineral	Walker River	J. H. Miller	112	0	9	Good		50	60,000	Black-spotted
June 17	Numana	Washoe	Truckee River	Nev. Fish & Game Com.	59	5	7	Good		25	60,000	Black-spotted
July 1	Lawtons	Washoe	Truckee River	Nev. Fish & Game Com.	0	64	3	Good		35	55,000	Black-spotted
July 8	Thorne	Mineral	Rose Creek	F. B. Balzar	182	20	104	Good		100	7,500	Eastern brook
July 9	Thorne	Mineral	Cat Creek	F. B. Balzar	182	10	10	Good		50	7,500	Eastern brook
July 9	Tonopah	Nye	South Twin River	L. E. Glass	255			Good			7,500	Eastern brook
July 9	Tonopah	Nye	Jefferson Creek	L. E. Glass	255			Good			7,500	Eastern brook
July 11	Minden	Douglas	Carson River	Geo. F. Dengberg	57	30	14	Good		Few	10,000	Black-spotted
July 11	Minden	Douglas	Carson River	C. O. Dengberg	57	27	14	Good		V.F.	10,000	Black-spotted
July 11	Minden	Douglas	Carson River	J. A. Cardinal	57	27	14	Good		V.F.	10,000	Black-spotted
July 11	Minden	Douglas	Carson River	Chas. Larson	57	27	14	Good		50	7,500	Eastern brook
July 13	Franktown	Washoe	China Camp Creek	W. F. Sauer	32	12	8	Good		0	7,500	Eastern brook
July 13	Franktown	Washoe	Winters Creek	W. F. Sauer	32	5	5	Good		0	7,500	Eastern brook
July 13	Franktown	Washoe	Opfir Creek	W. F. Sauer	32	2	7	Good		0	7,500	Black-spotted
July 13	Bates Dam	Washoe	Opfir Creek	W. F. Sauer	32	10	1	Good		0	55,000	Black-spotted
July 16	Minden	Douglas	Truckee River	Nev. Fish & Game Com.	0			Good		12	10,000	Black-spotted
July 20	Minden	Douglas	Carson River	Dr. H. A. Sweet	57	8	8	Good		3	10,000	Rainbow
July 20	Minden	Douglas	Carson River	E. C. Howard	57	10	84	Good		3	10,000	Rainbow
July 20	Minden	Douglas	Carson River	Geo. G. Hussman	57	16	84	Good		17	10,000	Black-spotted
July 22	Lakeview	Ormsby	Marlette Lake	Nev. Fish & Game Com.	38	14	9	Good		86	30,000	Black-spotted
July 24	Fallon	Churchill	Old River	Chas. H. Cross	72	5	7	Good		12	40,000	Black-spotted
July 26	Elko	Elko	Owyhee River	H. W. Naylor	324			Good			5,000	Eastern brook
July 26	Elko	Elko	Gold Creek	H. W. Naylor	324			Good			5,000	Eastern brook
July 26	Elko	Elko	Warm Creek	H. W. Naylor	324			Good			5,000	Eastern brook
July 26	Elko	Elko	Meadow Creek	H. W. Naylor	324			Good			5,000	Eastern brook
July 26	Elko	Elko	Martin Creek	H. W. Naylor	324			Good			5,000	Eastern brook
July 26	Elko	Elko	McDonald Creek	H. W. Naylor	324			Good			5,000	Eastern brook
July 28	Elko	Elko	Bruneau River	H. W. Naylor	324			Good			5,000	Eastern brook
July 30	Tonopah	Nye	Opfir Creek	L. E. Glass	255			Good		V.F.	7,500	Eastern brook
July 30	Tonopah	Nye	Jet Canyon Creek	L. E. Glass	255			Good			7,500	Eastern brook

July 30	Tonopah	Nye	Broad Canyon Creek	L. E. Glas	255	Good	Fine	None	7,500	Eastern brook
July 30	Tonopah	Nye	Barley Creek	L. E. Glas	255	Good	Fine	20	7,500	Eastern brook
Aug. 1	Elko	Elko	South Fork	Louie W. Englert	324	Good			7,500	Eastern brook
Aug. 1	Elko	Elko	North Fork	C. S. Tremewan	324	Good	O. K.	4	7,500	Eastern brook
Aug. 1	Elko	Elko	Talbot Creek	Ed. Lytton	324	Good			7,500	Eastern brook
Aug. 4	Elko	Washoe	Secret Creek	C. H. Fentice	324	Good			60,000	Black-spotted
Aug. 4	Verdi	Truckee River	Truckee River	Nev. Fish & Game Com.		Good		0	7,500	Eastern brook
Aug. 6	Carlin	Elko	James Creek	James Griffin	308	Good	Good	15	7,500	Eastern brook
Aug. 6	Carlin	Elko	Truckee River	George Arthur	308	Good	Fine	0	7,500	Eastern brook
Aug. 6	Carlin	Elko	Humboldt River	F. C. Stevens	308	Good	Good	0	10,000	Black-spotted
Aug. 6	Carlin	Elko	Humboldt River	W. C. Owens	308	Good	Good	0	10,000	Black-spotted
Aug. 9	Minden	Douglas	Carson River	Geo. H. Thompson	57	Good			10,000	Black-spotted
Aug. 9	Minden	Douglas	Carson River	Henry L. Beck	57	Good			10,000	Black-spotted
Aug. 9	Minden	Douglas	Carson River	H. W. Wurtel	57	Good			10,000	Black-spotted
Aug. 9	Minden	Douglas	Carson River	J. E. Denzel	57	Good			10,000	Black-spotted
Aug. 12	Death	Elko	Secret Creek	James M. Ryan	358	Good	Good	3	7,500	Eastern brook
Aug. 12	Death	Elko	Red Lake	James M. Ryan	358	Good	Good		7,500	Eastern brook
Aug. 12	Death	Elko	Pole Creek	James M. Ryan	358	Good	Good		7,500	Eastern brook
Aug. 12	Death	Elko	Bull Run Creek	James M. Ryan	358	Good	Good		7,500	Eastern brook
Aug. 15	Elko	Elko	Jack Creek	Barney Harris	324	Good	A-1	500	4,000	Eastern brook
Aug. 15	Elko	Elko	Taylor Canyon Creek	D. B. Williams	324	Good	Good	15	3,500	Eastern brook
Aug. 15	Elko	Elko	Town Creek	D. B. Williams	324	Good	Good	15	3,500	Eastern brook
Aug. 15	Elko	Elko	Cedar Hill Creek	Thomas Toyn	324	Good	Good	10	3,500	Eastern brook
Aug. 15	Elko	Elko	Stoff Creek	Thomas Toyn	324	Good	Good	10	3,500	Eastern brook
Aug. 18	Elko	Elko	Smith Creek	Elmer Anderson	324	Good	Good		7,500	Eastern brook
Aug. 18	Elko	Elko	Carville Creek	Albert Hankins	324	Good	Good		7,500	Eastern brook
Aug. 18	Elko	Elko	Pearl Creek	Alb. Arnoldt	324	Good	Good		4,000	Eastern brook
Aug. 18	Elko	Elko	Lamoille Creek	Alb. Arnoldt	324	Good	Good	15	3,500	Black-spotted
Aug. 18	Elko	Elko	Lamoille Creek	Geo. Heitmann	324	Good	Good	15	3,500	Black-spotted
Aug. 18	Elko	Elko	Thorne Creek	Jas. Bellinger	324	Good	Good	15	3,500	Black-spotted
Aug. 18	Elko	Elko	Thorne Creek	Jas. Bellinger	324	Good	Good	20	3,500	Black-spotted
Aug. 17	Reno	Washoe	Truckee River	Jas. Bellinger	0	Good	Good	10	45,000	Rainbow
Aug. 21	Minden	Douglas	Pine Nut Creek	Nev. Fish & Game Com.	57	Good	Good	0	7,500	Eastern brook
Aug. 21	Minden	Douglas	Carson River	R. C. Walker	57	Good	Good	58	10,000	Black-spotted
Aug. 21	Minden	Douglas	Carson River	F. H. Baker	57	Good	Good	6	10,000	Black-spotted
Aug. 22	Bates Dam	Washoe	Truckee River	Nev. Fish & Game Com.	57	Good	Good	7	30,000	Rainbow
Aug. 22	Death	Elko	Humboldt River	Al. St. Clair	358	Good	Good	15	10,000	Black-spotted
Aug. 23	Death	Elko	Battle Creek	Thomas S. Carter	358	Good	Good		7,500	Eastern brook
Aug. 23	Wells	Elko	Conway Creek	Thomas S. Carter	376	Good	Good		7,500	Eastern brook
Aug. 23	Wells	Elko	Luke Creek	Bradish & Winchel	376	Good	Good	2	7,500	Eastern brook
Aug. 26	Lakeview	Ormsby	Hobart Creek Reservoir	Va. & G. H. Water Co.	38	Good	Good	11	22,500	Rainbow
Aug. 27	Mogul	Washoe	Truckee River	Nev. Fish & Game Com.	0	Good	Good	8	25,000	Black-spotted
Aug. 27	Mogul	Washoe	Truckee River	Nev. Fish & Game Com.	0	Good	Good	16	10,000	Black-spotted
Aug. 28	Carlin	Elko	Humboldt River	W. L. McIntire	308	Good	Good	9	10,000	Black-spotted
Aug. 28	Carlin	Elko	Humboldt River	Chas. B. Kappler	308	Good	Good	6	10,000	Black-spotted
Aug. 28	Carlin	Elko	Humboldt River	Ross W. Thomson	308	Good	Good	14	10,000	Black-spotted
Aug. 28	Carlin	Elko	Humboldt River	John A. Scott	308	Good	Good	8	10,000	Black-spotted
Aug. 28	Carlin	Elko	Humboldt River	John A. Scott	308	Good	Good	15	10,000	Black-spotted
Aug. 31	Palisade	Eureka	Hot Creek	Geo. W. Goodfellow	294	Good	Good	0	5,000	Eastern brook
Aug. 31	Palisade	Eureka	Pond	Geo. W. Goodfellow	294	Good	Good	24	15	Black-spotted
Aug. 31	Palisade	Eureka	Pete Hansen Creek	Mrs. Sarah Plummer	294	Good	Good	34	6,000	Black-spotted
Aug. 31	Palisade	Eureka	Humboldt River	Mrs. Kate Cockerill	294	Good	Poor	20	5,000	Black-spotted
Aug. 31	Palisade	Eureka	Humboldt River	Mrs. Spierlich	303	Good	Good	60	2,000	Black-spotted
Aug. 31	Palisade	Eureka	Humboldt River	Mrs. Spierlich	303	Good	Good	22	10,000	Black-spotted

REPORT OF STATE FISH AND GAME COMMISSION

TROUT DISTRIBUTION, 1918—Continued

Date	From railroad station	County	Waters stocked	Consignee	Miles by railroad	Miles by wagon	Hours in transit	Condition when received	Condition when planted	Number dead when planted	Number of fry in shipment	Variety
Aug. 31	Carlin	Elko	Humboldt River	William S. McKinney	303	2	14	Good	Good	5	10,000	Black-spotted
Sept. 6	Paisade	Eureka	Humboldt River	C. B. Batin	284	2	14	O. K.	O. K.	10	10,000	Black-spotted
Sept. 6	Paisade	Eureka	Humboldt River	N. J. Rice	284	2	13	O. K.	O. K.	0	10,000	Black-spotted
Sept. 6	Paisade	Eureka	Humboldt River	N. J. Velly	284	2	13	Good	Good	0	10,000	Black-spotted
Sept. 9	Bates Dam	Washoe	Truckee River	Wendell Jones	284			Good	Good	0	35,000	Rainbow
Sept. 9	Beowawe	Eureka	Black Creek	T. R. Weber	0	3	2	Good	Good	0	7,500	Black-spotted
Sept. 10	Beowawe	Eureka	Black Creek	John N. Wells	276	14	12	Good	Good	100	7,500	Black-spotted
Sept. 10	Beowawe	Eureka	Black Creek	John N. Wells	276	24	15	Good	Good	0	7,500	Black-spotted
Sept. 13	Battle Mountain	Lander	Humboldt River	Geo. L. Eads	244	8	12	Good	Good	20	10,000	Black-spotted
Sept. 13	Battle Mountain	Lander	Humboldt River	Fred Altenburg	244	1	12	Good	Good	50	10,000	Black-spotted
Sept. 13	Battle Mountain	Lander	Humboldt River	Fred Altenburg	244	1	12	Good	Good	50	10,000	Black-spotted
Sept. 13	Battle Mountain	Lander	Humboldt River	Fred Altenburg	244			Good	Good	50	10,000	Black-spotted
Sept. 17	Winnemucca	Humboldt	Humboldt River	J. A. Kinsburg	185	4	10	Good	Good	30	10,000	Black-spotted
Sept. 17	Winnemucca	Humboldt	Hillier Canyon Creek	Teno E. Farra	185	58	24	Good	Fair	1,000	7,500	Black-spotted
Sept. 17	Winnemucca	Humboldt	Clack Creek	J. A. Kinsburg	185	20	11	Good	Good	0	7,500	Black-spotted
Sept. 17	Winnemucca	Humboldt	Clack Creek	J. A. Kinsburg	185	20	11	Good	Good	0	7,500	Black-spotted
Sept. 20	Austin	Lander	Elkhorn Creek	W. T. Maestretti	337	33	28	Good	Good	20	7,500	Black-spotted
Sept. 20	Austin	Lander	Reynolds Creek	Williams & Hodre	337	37	27	Good	Good	7	7,500	Black-spotted
Sept. 20	Austin	Lander	Stainer Creek	John Sval	337	25	27	Good	Good	50	6,000	Black-spotted
Sept. 20	Austin	Lander	Hunt Creek	Henry King	337	25	27	Good	Good	50	6,000	Black-spotted
Sept. 24	Toponah	Nye	Six-Mile Creek	J. G. Phillippi	337	4	24	Good	Good	1	5,000	Black-spotted
Sept. 24	Toponah	Nye	Stewart Creek	Geo. L. Dugan	255	90		Good	Good	0	7,500	Black-spotted
Sept. 24	Toponah	Nye	Stewart Creek	L. E. Glass	255			Good	Good	0	7,500	Black-spotted
Sept. 24	Toponah	Nye	Stewart Creek	L. E. Glass	255			Good	Good	0	7,500	Black-spotted
Sept. 27	Austin	Lander	Skull Creek	Robertson & Schmidtlie	337			Good	Good	0	7,500	Black-spotted
Sept. 27	Austin	Lander	Washington Creek	C. A. Boret	337	31	30	Good	Good	0	10,000	Black-spotted
Sept. 27	Austin	Lander	Washington Creek	T. F. Bell	337	54	30	Good	Good	6	7,500	Black-spotted
Sept. 30	Verdi	Nye	Resse River	Nev. Fish & Game Com.	0	0	0	Good	Good	0	5,000	Black-spotted
Sept. 30	Verdi	Nye	Truckee River	Nev. Fish & Game Com.	0	0	0	Good	Good	0	5,000	Black-spotted
Oct. 1	Ely	White Pine	County Hatchery	A. C. Powell	556	1	31	Good	Good	05	15,000	Rainbow

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JANUARY 1, 1919

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PUBLIC SERVICE DIVISION
STATE HYGIENIC LABORATORY

Reprint of Report of the Director of the Hygienic
Laboratory as Given in the Biennial Report of
the Regents of the State University
for the Years 1917-1918

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REPORT OF STATE HYGIENIC LABORATORY

December 31, 1918.

To the President, University of Nevada.

According to the statute requirements the Director of the State Hygienic Laboratory "shall publish annually a report of the work done in the Laboratory during the preceding year." It has been customary, however, during past years, for the Director to submit to the President of the University of Nevada a biennial report of the work done during the two preceding years, and that custom is being followed at this time.

The Director of the Laboratory and his assistants are instructed "to examine promptly and report to the person sending it, such material, free of charge, as may be submitted by any health officer or health board or any physician licensed to practise medicine in the State of Nevada for the diagnosis of any infectious disease in which laboratory methods are of recognized value; to examine such other clinical and pathological material as may, in the discretion of the Director appear feasible; and to undertake research into the nature, cause, diagnosis, and control of the infectious diseases."

In looking over the records of the Laboratory, it is evident that the various Directors have given a different interpretation to the clause which reads "for the diagnosis of any infectious disease in which laboratory methods are of recognized value." Early in the history of the Laboratory the work was limited to the examination of materials submitted for the diagnosis of tuberculosis, diphtheria, typhoid fever, and malaria, and bacteriologic water analyses. In 1914 the scope of the work was extended so as to include in addition to the above, the diagnosis of anthrax, actinomycosis, cholera, dysentery, hookworm disease, glanders, gonorrhea, Malta fever, meningitis, pyogenic infections, plague, rabies, septicemia, syphilis and pathological tissues, and numerous other clinical diagnoses. Many of the diseases enumerated in the latter list are exceedingly rare in Nevada, and the Laboratory is scarcely ever called upon to make the diagnosis. On the other hand, a number of them are very prevalent, and their diagnosis soon demanded a large part of the bacteriologist's time. This is due in large part to the fact that the Wasserman test for the diagnosis of syphilis and the examination and diagnosis of pathological tissues are very time-consuming operations.

In 1916, when the direction of the Laboratory had passed under a different man, the larger scope of work was again abandoned and practically the original policy was resumed. This change in policy soon resulted in a great diminution of the work that the Laboratory was called upon to do. During the early autumn of 1917 the Laboratory had no Director for a period of two and a half months, and this fact, together with the change in policy explains why so few examinations were made during the year 1917, as shown in Table I.

TABLE I
Summary of Examinations Made in the Nevada State Hygienic Laboratory
During the Year 1917

<i>Nature of Examination</i>	<i>Positive</i>	<i>Negative</i>	<i>Inconclusive</i>	<i>Total</i>
Diphtheria cultures.....	45	80	12	137
Tuberculosis.....	23	85	1	109
Typhoid test (Widal).....	48	96	10	154
Milk analyses.....	—	—	—	138
Gonococcus infection.....	4	5	—	9
Malaria.....	1	16	—	16
Wasserman test.....	—	3	—	3
Miscellaneous.....	—	—	—	29
Water analyses.....	—	—	—	8
Total.....				603

In December, 1917, shortly after the present Director was placed in charge, a circular letter was mailed to every physician in the State announcing that the scope of work would again be materially increased and would include the following-named examinations and analyses which are made free of charge.

1. Examination of throat cultures for the diagnosis of diphtheria or release from quarantine.

2. Examination of sputum for tubercle bacilli.

3. Widal tests for the diagnosis of typhoid fever.

4. Examination of blood smears for the diagnosis of malaria.

5. Examination of smears of urethral pus for diagnosis of gonorrhea. Two smears on glass slides must be submitted for this examination.

6. Examination of pus smears from conjunctivitis and other suppurating foci to determine the nature of infection. Two smears on glass slides must be submitted for these examinations.

7. Examination of blood serum for the diagnosis of syphilis (Wasserman test.) At least two cubic centimeters of clear serum, or five cubic centimeters of sterile blood, must be sent for this examination. These Wasserman tests are made on Tuesday and Friday of each week. Specimens should therefore be received at the laboratory on Monday or Tuesday morning, or on Thursday or Friday morning.

8. Microscopic examination of urinary sediment for the presence of tubercle bacilli in suspected tuberculosis of the kidney; also for the presence of other bacteria, pus or blood, to aid in the diagnosis of infections of the genito-urinary tract.

9. Bacteriological water analyses. Persons desiring a water analysis should correspond with the Laboratory before sending the sample. Samples submitted in unsterile bottles and not packed in ice will not be accepted for bacteriological analysis.

10. Conveyors for properly collecting and submitting specimens for examination are sent free to any health officer or physician upon request.

TABLE II
Summary of Examinations Made in the Nevada State Hygienic Laboratory
During the Year 1918

<i>Nature of Examination</i>	<i>Positive</i>	<i>Negative</i>	<i>Inconclusive</i>	<i>Total</i>
Diphtheria cultures.....	21	72	3	96
Tuberculosis.....	30	105	—	135
Typhoid test (Widal).....	57	98	4	159
Milk analyses.....	—	—	—	241
Gonococcus infection.....	20	32	—	53
Malaria.....	2	21	1	24
Wasserman test.....	110	291	10	411
Miscellaneous.....	—	—	—	433
Water.....	—	—	—	120
Total.....				1,672

It is the belief of the Director that the work as outlined above is in compliance with the original intention of the law. Moreover, it is in harmony with the policy of the majority of state laboratories in operation at this time.

The announcement of this policy almost immediately brought a decided increase in the work, as is shown in Tables II and III.

TABLE III

Total Number of Examinations Made in Each Month During the Years 1917-1918

	1917	1918
January	41	108
February	34	142
March	57	136
April	33	169
May	45	161
June	54	139
July	42	178
August	50	163
September	32	161
October	45	149
November	80	86
December	80	86
Totals	608	1,672

Reference to Tables I and II shows that this increase is due largely to the Wasserman tests and examination of miscellaneous specimens. There is also a considerable increase in the number of water analyses and milk analyses, but most of these specimens were collected locally. The number of water samples received for bacteriological analysis from outside of Reno is relatively small, and an effort will be made to extend this important branch of the work. This, however, cannot be readily done unless some one connected with the laboratory is free to make field investigations as occasion demands. At present all of the bacteriological and pathological work in the Laboratory is being done by the Director, who has only the assistance of a laboratory boy on part-time and a stenographer on half-time.

SERVICE RENDERED ACCORDING TO COUNTIES

It is the purpose and the aim of the State Hygienic Laboratory to serve every section of the State whenever the occasion arises. Reference to Table IV shows that specimens were received from, or service rendered for persons in, every county in the State. Very few specimens were received from Clark and Lincoln Counties which is no doubt due to the fact that they have very poor connections either by mail or express with the Laboratory in Reno.

PASTEUR PREVENTIVE TREATMENT FOR RABIES

During the last four or five years there has been a great deal of rabies among the coyotes, dogs and other animals of the State. This fact has made exposure of human beings to this disease a matter of frequent occurrence. When a person has been bitten by, or otherwise definitely exposed to the infection of, a rabid animal, no time should be lost in getting the preventive treatment for this disease. This treatment has been given free of charge at the State Hygienic Laboratory to all residents of the State of Nevada during the last three and a half years. The material for these treatments is received in biweekly shipments from the Hygienic Laboratory, United States Public Health Service, Washington, D. C., and treatments are administered by the

TABLE IV
Showing Total Number of Specimens of Each Kind Received from Each County

County	Diphtheria		Tuberculosis		Widal		Water		Wasserman		Miscellaneous		Antraboles treatments		Total	
	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918
Churchill	2	2	1	8	11	8					0	2	2	1	16	21
Clark	0	0	0	0	0	0					0	0	0	0		1
Douglas	0	4	0	2	0	0		1			0	0	0	0		10
Elko	0	0	3	11	26	13				61	2	3	5	7	86	105
Emeralda	0	0	1	2	9	5		1			13	13	0	0	14	14
Eureka	0	0	0	0	0	0					0	0	0	0	1	1
Humboldt	20	8	10	13	6	4		2		15	7	8	2	2	2	58
Lander	0	3	0	1	0	0					0	0	0	0	51	19
Lincoln	0	0	0	0	0	3					0	0	0	0	2	1
Lyon	1	0	15	7	17	19		1			2	4	6	1	44	40
Mineral	9	8	11	8	4	2		2		7	5	2	0	0	26	28
Nye	0	1	10	2	4	11		1		5	2	1	2	1	17	20
Ormsby	2	1	13	8	6	7		2		4	3	0	4	0	28	51
Storey	0	0	1	3	8	5		2		2	0	0	0	0	9	22
Washoe	101	67	23	67	65	60		94		286	171	676	5	8	866	1,258
White Pine	2	1	21	10	8	22		13		16	0	3	3	1	84	66
Totals	137	96	109	135	154	159	8	120	8	411	192	751	38	37	644	1,713

Director of the State Hygienic Laboratory free of charge. During the year 1917, 38 persons, coming from ten different counties in the State, were given this treatment, and during the year 1918, 37 persons were treated, coming from nine different counties. If the patients had to go outside of the State for these treatments, they would be required to pay a fee of approximately \$100 and a considerable amount for additional traveling expenses. The antirabies treatments alone, therefore, have saved the people of the State during the last two years more than \$7,500.

TABLE V
Total Number of Rabies Treatments Given Each Month During the
Years 1917-1918

	1917	1918
January	6	5
February	7	1
March	4	3
April	5	6
May	1	4
June	2	6
July	0	1
August	1	0
September	5	2
October	0	1
November	4	6
December	3	2
Totals	38	37

FIELD INVESTIGATIONS

Very little time has been available for the very important work of making field investigations in attempting to locate the source of infection during an outbreak of an infectious disease. This is due solely to the fact that the Director has no trained assistant who can do the routine work in the Laboratory while the former is out making epidemiological investigations. A bacteriological laboratory often is essential in controlling and checking an outbreak of a contagious disease, but the best results are obtained only when the laboratory determinations are used by trained field workers who can study at the infected locality the distribution and spread of the disease. In order to get the best results and the greatest efficiency in service, the Laboratory should be intimately connected with a division or bureau of infectious diseases of the State Board of Health which has definite authority and at least one trained epidemiologist. During the year 1918, the Director of the Laboratory made three field investigations of typhoid outbreaks in Ely and McGill. These investigations were made in response to a request, from the city authorities in the district infected, to the Governor, who communicated the request to the Laboratory. The results of the investigation of the first outbreak of typhoid in Ely, during the winter and spring of 1918, were as follows:

The Director of the Laboratory arrived in Ely on March 26, and in an interview with Dr. W. S. Holmquist, Health Officer for White Pine County, was informed that there had been reported eleven cases of typhoid fever in Ely from January 25 until March 26. Dr. Holmquist had already made a careful inquiry into the milk supply of every household where typhoid fever had appeared and found that all were getting milk from dairy "M." He then visited dairy "M" and found that they had engaged a new helper in the dairy about January 10; upon questioning this man in regard to his past history relative to

typhoid fever, he discovered that the man was in the hospital with typhoid during the months of October and November, 1917. Dr. Holmquist immediately ordered him (Mr. T.) to leave the dairy and be confined in the county hospital until the arrival of the State Bacteriologist.

Accompanied by Dr. Holmquist, I visited all the families in which typhoid fever had appeared, in order to gather all data that might possibly throw light upon the source of the infection. All of the patients were found to be using city water and all stated that they were milk drinkers and had been getting their milk from dairy "M." The city water was considered safe and this was verified by a bacteriological analysis of a sample collected on March 27. Practically all of the patients had been eating at their homes and all denied having been away from Ely for over a month prior to the onset of their illness. Groceries, butter, and other supplies for table use were bought at various stores, and it did not appear that they were getting anything in common except the drinking water and the milk. All data gathered, therefore, pointed very strongly to the milk from dairy "M" as being the vehicle of infection. This conclusion was greatly strengthened by the fact that one of the helpers who had recently come into the employ of this dairy was convalescent from typhoid fever only about six weeks before entering the employ of the dairy. This man was therefore given a brisk cathartic to get several specimens of stool for bacteriological examination. Two specimens of stool and two samples of urine were obtained, and litmus lactose agar plates made from each within an hour after procuring the sample; a portable bacteriological outfit having been taken along from the Laboratory. The plates were carried home to the Laboratory and incubated for twenty-four hours. None of the plates from the two samples of urine, nor those from the first stool, which was fairly solid, contained any typhoid colonies. The plates from the second sample of stool, however, which was semiliquid, contained more typhoid colonies than colonies of *B. coli*. These organisms were then positively identified as *bacillus typhosus* by both cultural and serologic tests.

It was proven, therefore, that the outbreak of typhoid fever occurring in Ely between January 25 and March 26 was caused by the infection of a milk supply by a dairy helper who was a typhoid bacillus carrier.

One lesson that should be learned from the results of this investigation is to the effect that no person should be allowed to enter into the employ of a dairy until his past history relative to typhoid fever has been ascertained by the local health officer. If a history of typhoid fever is obtained, there should be made a careful bacteriologic examination of the urine and several specimens of stool to determine the presence or absence of typhoid bacilli. The stools must be obtained with the aid of a cathartic or the findings are more likely to be negative, even though the person is a chronic bacillus carrier.

The results of the investigations of the typhoid outbreak in McGill and the second outbreak in Ely in September, 1918, are set forth in the following copies of reports submitted to the authorities of the communities infected:

September 5, 1918.

MR. C. B. LAKENAR, *General Manager Nevada Consolidated Copper Company, McGill, Nevada.*

DEAR SIR: The sanitary inspection of the water and milk supplies at McGill,

and the epidemiological investigation of the typhoid outbreak made on the 2d instant has led to the following definite results and conclusions:

1. Eight cases of typhoid fever were discovered in McGill between August 9 and August 20.

2. All of these patients have been using water from what is known as the "Domestic Spring supply" and there are no patients who have been using exclusively the water from the "Duck Creek supply."

3. All of the patients have been using milk from the McGill Dairy prior to their illness. This fact, however, is of no significance because there is only one dairy in McGill and, if they are using fresh milk at all, they must get it from this dairy.

4. A careful sanitary inspection of the so called "Domestic Spring" and its surroundings showed that the casing of the well-pit is in a dilapidated condition, leaving the well open to all manner of surface pollution. It is noted that the surface drainage from a considerable area is toward the well-pit and in case of rain large quantities of surface water must run into the well.

5. It was found further that the soil surrounding this well is being polluted with human excreta, which I found to be deposited less than two feet away from the edge of the well-pit.

6. It was learned that there was a fairly heavy rain in McGill about the end of July or first of August. This gave ample opportunity for the well to have become polluted with the human excreta which are disposed on the ground in the immediate vicinity, and this pollution undoubtedly occurred at that time.

From the foregoing data we can draw the positive conclusion that the outbreak of typhoid fever which occurred in McGill between August 9 and August 20 was due to a pollution of the "Domestic Spring" water with human excreta on or about August 1. Your local physicians were of the opinion that the infection came from the milk. I am convinced, however, that this is not the case, for the following reasons: It would be a most extraordinary occurrence to have eight persons who are using the "Domestic Spring" water become infected with typhoid fever from the milk, whereas all of the people who are using the "Duck Creek" water escaped infection, although they were using the same milk. That such a thing happened is so extremely improbable that we can rule out, unhesitatingly, the milk as the source of infection. Moreover, the findings of the condition of the well and the soil immediately surrounding it are sufficient evidence to show that this water is sure to be polluted in times of rain.

This well can and must be made safe by putting in a concrete casing, at least one foot thick. This casing should start about eight or ten feet below the present water-line and should be brought up four or five feet above the surrounding ground. The well top should be vaulted over and provided with a manhole that is closed with a well-fitting iron cover. This cover must be made with a radial arm type of lock so that the arms on the under side of the cover can be thrown out until they project beneath the rim of the manhole. The cover is locked and unlocked by turning a large nut on the upper surface of the cover by means of a large wrench.

The low and open spaces around the casing must be filled in with clay, which must be moistened and thoroughly tamped in close to the casing. The filling-in must be brought up high enough so that the rain and snow water will run away from the well top and not toward it. When this filled-in soil has been thoroughly tamped in and has settled, it should be covered with a fairly heavy layer of concrete for a radius of eight or ten feet.

In addition to this I strongly recommend that you enclose the well with a barb-wire entanglement at least six feet high. This barb-wire entanglement should have a radius of about fifteen feet and must be provided with a strong gate that can be securely locked, so that nobody can pollute the surroundings of this well as has been done in the past.

7. The milkhouse at the dairy was found to be in an insanitary condition. The milk bottles are not sterilized in any way and the water that is used for washing and rinsing them is open to all manner of pollution, and is polluted as shown by a bacteriological analysis of a sample collected by me on September 2. This analysis showed that there were more than 5 colon bacilli per cubic centimeter in this water, and a total of 768 bacteria of all kinds in each cubic centi-

meter. A new milkhouse should be built on higher ground and should be supplied with water from the "Domestic Spring," which must be made safe. The milkhouse must be equipped with a modern bottle-washing and sterilizing machine and a modern milk-bottler. Somebody with authority must visit this dairy about once a week and see to it that the bottles and bottler are properly cleansed and sterilized after having been used.

8. The three or more sewer outlets in McGill do not extend far enough out into the bed of waste water and should be extended 200 or 300 feet.

9. Most of the outside privies are of improper construction and practically all of the vaults are full and in an insanitary condition. The greatest objection to an outdoor privy, in a country where there are flies, is the fact that they are usually so constructed that they are entirely open, giving free access to the flies. An outdoor privy, in order to be safe against the spread of typhoid fever, must be made fly-proof.

I am requesting the Surgeon-General of the United States Public Health Service to send you pamphlets describing the construction of sanitary outside privies.

The contents in many of the vaults at present should be treated with chloride of lime. Wherever possible, the outside privy should be discontinued and flush toilets installed. This latter recommendation applies with even greater force to the toilets in the vicinity of the Smelter and various shops. I inspected a number of them and found them to be in a very insanitary condition.

10. The bacteriological analysis of the "Duck Creek" water gave evidence of pollution with colon bacilli in every cubic centimeter of the sample. I presume that most of this is due to animal pollution and not human pollution; but the fact that the water is so open to animal pollution renders it unsafe. I would strongly recommend that you install a chlorine treatment plant for the filtered "Duck Creek" water. The pressure filter which you have apparently does not remove the bacteria from the water because the filtered water gave just as much evidence of pollution as the unfiltered water. I believe that the chlorine should be administered into the pipes against the pressure which you have, although it might be better to pump the water into a reservoir at a high enough elevation to give you the necessary water pressure in the distributing mains from gravity. Liquid chlorine can be purchased in steel cylinders and is administered at the rate of .5 to .6 milligram of chlorine per liter of water pumped. It is a thoroughly reliable disinfectant for polluted water and if not used to excess, does not leave a perceptible taste. All of the drinking water supplied in Reno on the north side of the river is being treated with chlorine.

Please find enclosed herewith my bill for expenses actually incurred on the trip to McGill.

Very truly yours,

G. F. RUEDIGER, *Director.*

September 24, 1918.

Mr. A. B. WITCHER, *Major, Ely, Nevada.*

DEAR SIR: The investigation of the typhoid epidemic at Ely, made on the 20th instant, led to the following results:

1. Fourteen cases of typhoid fever appeared in Ely between August 23 and September 13.

2. All of these patients were drinking water from the city supply of Ely, but four of them have been drinking water elsewhere during the month preceding their illness. Two admit having been to McGill once or twice, but stayed only a few hours. One has been working at Ruth, but resides in Ely, and the fourth case came from Ward about two weeks prior to being taken sick. The remaining ten drank no water other than that from the public supply in Ely.

3. Twelve of the fourteen patients were getting milk from Moeller's dairy, but two of these twelve deny having drunk any milk except in

their coffee and sometimes on breakfast cereals. Two patients deny having received any milk from Moeller's dairy at their homes. The remaining ten state that they drank milk from Moeller's dairy quite regularly and several of them say they have been drinking large quantities of it.

4. There appears to be no other article of food or drink that many of them have been getting in common. Butter, ice-cream, vegetables, bread, and other groceries have been bought almost everywhere in the city, but there is no article among these which has been used in common by a large number of patients.

5. An investigation of conditions at Moeller's dairy showed that this is a most insanitary place and not at all suited for producing a safe milk. The milkhouse is built adjoining the barn, is swarming with flies, and is otherwise filthy. The washing and sterilizing of bottles and other utensils appear to be but imperfectly done. The water used for this purpose is taken from a shallow well about eighteen or twenty feet in depth and located under the west end of the milkhouse, not more than five feet from a manure pile. The well is in no way protected against seepage from the manure pile and barnyard, nor is the top protected against the introduction of filth from the employees' boots. The water in this well is nothing but seepage from the manure pile, mixed with more or less cow urine. A bacteriological analysis of this so-called water showed it to contain a total of nearly 20,000 germs per cubic centimeter (about 80,000 per teaspoonful), and over 600 disease germs of various kinds per cubic centimeter. These include streptococci, colon bacilli, and other bacteria of intestinal origin. This water is so badly polluted that it is certain to produce intestinal diseases if it were used for drinking purposes, and is certainly responsible for some of the typhoid that has recently developed in Ely. The water from this well must not under any circumstances be permitted to be used again in washing and rinsing the milk utensils, as was indicated in my telegram of Sunday evening.

6. The public water supply at Ely is found to be unsafe for drinking purposes. The source of supply appears to be properly protected and is satisfactory, but the ditch leading along the hillside from the springs to the reservoir is open to pollution, and a careful investigation showed that it is being polluted with human excreta. I made a careful inspection of the entire distance and found a great deal of evidence of trespassing along the ditch and in three different places I found deposits of human excrement along the edge of the ditch. In addition, I found the remains of decayed bodies of two dead sheep not more than five or six feet from the edge of the ditch on the up-hill side.

It is evident from this inspection that the ditch is not properly protected and the water is being polluted to a considerable extent. I was informed, by a person who is in a position to know from observation, that the children are in the habit of playing along this ditch and frequently go in wading and send their dogs in after sticks and other objects that are thrown into the water. Moreover, the children throw in rocks and dirt in an attempt to dam up the water, which rubbish has to be removed at intervals by the caretakers. It is evident, therefore, that the water is polluted, and I am convinced that some of the typhoid in Ely is traceable to the water supply. I collected samples for bacteriological analysis at Mr. Witcher's residence and at the Lincoln Highway garage. Both of these samples gave evidence of pollution, as is shown by the fact that bacteria of intestinal origin were found in every cubic centimeter of the samples analyzed. The total number of germs per cubic centimeter was over 200 in each sample.

The water supply must be properly protected against the pollution before you can hope to remain free from typhoid fever in Ely. This can perhaps be done most satisfactorily and most economically by piping the water down the canyon from the little reservoir at the head of the ditch, some sixty or seventy-five feet below the springs. The ditch along the hillside could be continued if water is wanted on the hill beside the courthouse for power purposes. The

pipe leading from that reservoir, however, should not be connected with the city mains that supply the drinking water. It is the duty of the city of Ely to insist that this safeguarding of the public water supply be instituted at the earliest possible date.

Very truly yours,

G. F. RUEDIGER, *Director.*

SPECIMEN CONVEYORS DISTRIBUTED

In order that specimens may be properly collected and transmitted to the Laboratory every physician in the State is supplied, upon request, with proper specimen conveyors. During the last two years the following numbers of conveyors of this character were distributed:

Diphtheria outfits.....	103
Tuberculosis outfits.....	147
Typhoid outfits.....	166
Malaria outfits.....	27
Wasserman outfits.....	373
Water conveyors.....	10

FREE ANTI-TYPHOID VACCINE

For several years the Laboratory has been making and distributing antityphoid vaccine free of charge upon request from any physician in the State. During the year 1918 we distributed vaccine for the complete vaccination of ninety-two persons, living in nine different counties of the State.

During the autumn of 1918 a small quantity of Dr. Rosenow's influenza and pneumonia vaccine was procured, from the Mayo Foundation, for free distribution. To date we have distributed enough of this vaccine for eighty-six complete vaccinations.

Respectfully submitted,

GUSTAV F. RUEDIGER, M.D.,

Director, State Hygienic Laboratory.

NEVADA EDUCATIONAL BULLETIN

PUBLISHED BY

THE STATE DEPARTMENT OF EDUCATION

No. 1

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VOL. 1

GENERAL POLICIES

FIRST ISSUE OF THE NEVADA EDUCATIONAL BULLETIN

The NEVADA EDUCATIONAL BULLETIN makes its appearance before the school forces of the State as a medium of communication between school officials of the State and the local school communities and workers. It is intended to bring fuller information in regard to the education plans of the Department of Education than could be given by letters sent out to the individual teachers and school board members. The possibilities of service in such a monthly bulletin are well established by the experience of other States where the plan of issuing such has been in use for a number of years. Inasmuch as such bulletin is an official means of communication, rather than a journal of educational matter in general, it is sent out free to all who should have access to its announcements. It is not, therefore, an enterprise on a subscription basis.

EDITORIAL MANAGEMENT AND CONTRIBUTORS

While the NEVADA EDUCATIONAL BULLETIN is edited by the Superintendent of Public Instruction and the State Director of Vocational Education, contributions from the several Supervisors of Vocational Education, the District Deputy Superintendents, and the superintendents and principals and teachers of the State generally are desired, in order that the exchange of ideas may be made a strong feature of the BULLETIN, as well as the official announcements of the several departments of supervision. Educational news will have a place in these columns, as the geographic difficulties of our State keep the school workers rather isolated, affording but few opportunities to get together for fraternal fellowship and the exchange of professional items of interest. It must be understood, of course, that the primary object of the BULLETIN must first be served so that where space is limited the less directly essential matters will have to wait upon the specifically important topics of any particular issue.

Suggestions are invited from all interested. The attention of teachers and workers is urged to each issue, that important items of official announcement may not be overlooked.

VOCATIONAL EDUCATION NUMBER

The newness of the work in our State for the development of Vocational Education, the call of the time for greater attention to the preparation of our boys and girls for practical occupations that our Nation may be ready for any demand made upon it industrially, has caused the department to give a large share of this first issue to the Vocational Education plans under way.

GENERAL SCHOOL MATTERS IN NEXT ISSUE

The next issue of the BULLETIN will be devoted to such topics as Emergencies in Certification, Eighth-Grade Examinations, State Teachers' Examinations, New Educational Laws, and many items of particular interest in the closing weeks of the school year.

UNIVERSITY OF NEVADA SUMMER SCHOOL SESSION

The announcement by Dr. J. R. Young that the Summer Session of the University of Nevada will run from June 23 to August 1, 1919, is given at this time to enable teachers to plan accordingly. More will be said in the next issue in the hope of encouraging many Nevada teachers to take advantage of this opportunity to benefit themselves and the schools of the State.

CERTIFICATION OF NEVADA TEACHERS

Certification matters that did not involve the immediate need of a certificate to enable a teacher to be lawfully employed have been laid over during the press of legislative interests; these matters are now being considered and will be disposed of as soon as possible. All teachers having questions concerning certification for next year should bring them to the attention of this office as soon as possible now, in order that all necessary arrangements involved may be made in time. The emergency period has passed and the normal restrictions in regard to the issuance of temporary and provisional certificates will now prevail. The regular requirements will now be maintained, subject only to such general changes as the State Board may see fit to make in the interest of better regulation of certification. Teachers should act in time to be ready for the coming year.

THE BUDGET LAW

The operation of the budget law affects school districts for the first time this year. The budget is to be made out to cover the coming school year extending from July 1, 1919, to June 30, 1920. Now is the time (before the April meeting of the County Commissioners) to get into the budget those items of expenditure that should be provided for school maintenance next year.

SMITH-HUGHES MONEY ARRANGEMENTS

The attention of school boards and superintendents and principals is called to the fact that it is better to prepare now for participation in the Smith-Hughes Fund provisions referred to elsewhere in this bulletin than to let this matter go over until all the available money is arranged for; also, it is necessary to get this item into the school budget in order to have ample provision for that part of the maintenance which must come from the local district. Write or wire State Director R. A. Jones for a personal conference. It may be that he can

take time to visit your school on his next trip to your section of the State. He is endeavoring to reach those schools first that have sought to arrange for some phase of this vocational work.

INCREASED STATE APPROPRIATIONS

Attention is called to the fact that the provisions of the School Apportionment Law of 1917 for the apportionments from and after January, 1920, call for an increase of \$25 a year per teacher and \$1 a year per pupil on the part of the State, making the semiannual apportionments \$150 per teacher and \$2.50 per pupil from the State. The county apportionments remain the same. The new provisions making it the duty of County Treasurers and County Auditors to keep the school moneys in a single fund and some minor changes in the apportioning of the relief money will be taken up in the next issue.

—W. J. H.

BOYS AND GIRLS STAY IN SCHOOL ! TRAIN FOR THE FUTURE !

Children should stay in school as long as possible because **EDUCATION MEANS BETTER JOBS.**

Boys and girls who go to work at the end of grammar school rarely get good jobs. The work they find to do is usually unskilled; it offers little training or chance for advancement. When they are older they find that they are still untrained for the skilled work which offers a future. **EDUCATION MEANS HIGHER WAGES.**

Many boys and girls when they leave school find work that offers a high wage for a beginner. But these wages seldom grow because the work requires no training.

A position with a future and steadily increasing wages requires school training.

Here is the Proof:

This table (prepared by the United States Bureau of Education) compares the wages of a group of children who left school at 14 years of age with another group who left at 18 years of age:

Earnings per week of children who left school at 14, the end of grammar school	Age	Earnings per week of children who left school at 18, the end of high school
\$4.00	14	.....
4.50	15	.....
5.00	16	.....
6.00	17	.....
7.00	18	\$10.00
8.50	19	10.75
9.50	20	15.00
9.50	21	16.00
11.75	22	20.00
11.75	23	21.00
12.00	24	23.00
12.75	25	31.00
Total salary till 25 years of age, \$5,112.50		Total salary till 25 years of age, \$7,337.50

At 25 years of age the boy who had remained in school until 18 had received over \$2,000 more salary than the boy who left at 14, and was then receiving over \$900 a year more.

This is equivalent to an investment of \$18,000 at 5 per cent. Can a boy increase his capital as fast any other way?

From this time on the salary of the better educated boy will rise still more rapidly, while the earnings of the boy who left school at 14 will increase but little.

Although the wages paid now are much higher than when this study was made, the comparison remains the same.

—Children's Bureau, U. S. Dept. Labor.

THE SMITH-HUGHES ACT AND THE PART-TIME SCHOOL

The Smith-Hughes Act provides a scheme of cooperation between the Federal Government and the States for the promotion of vocational education in the fields of agriculture, trade, home economics, and industry.

This cooperation of the States with the Federal Government is based upon four fundamental ideas: First, that vocational education being essential to the national welfare, it is a function of the National Government to stimulate the States to undertake this new and needed form of service; second, that federal funds are necessary in order to equalize the burden of carrying on the work among the States; third, that since the Federal Government is vitally interested in the success of vocational education, it should, so to speak, purchase a degree of participation in this work; and, fourth, that only by creating such a relationship between the central and the local governments can proper standards of educational efficiency be set up.

The guiding principle of the Vocational Education Act is that the education to be furnished must be under public supervision and control and designed to train persons for useful employment. Now the vocational education as defined in the Act is this:

To the extent that it is subsidized by the Federal Government under the Smith-Hughes Act, vocational training must be vocational training for the common, wage-earning employments. It may be given to boys and girls who, having selected a vocation, desire preparation for entering it as trained wage-earners; to boys and girls who, having already taken up a wage-earning employment, seek greater efficiency in that employment; or to wage-earners established in their trade or occupation, who wish through increase in their efficiency and wage-earning capacity to advance to positions of responsibility. No academic studies can be supported out of Smith-Hughes money except as directly related to the vocational subjects being taught.

The aim of this Act then is to reach, first, the boys and girls who have left school between 14 and 18 years of age; second, to reach the boys and girls who are just choosing to leave school, those who have selected a vocation and desire preparation for entering it; third, the adults at work realizing their limitations and desiring some training that supplements their daily work, making them more efficient, and leading to advancement.

The welfare of these three groups is of especial concern to our Government at this time. Those who leave school under 18, immature in experience and judgment and with limited training, should not have to face the world so unprepared, without the aid and guidance the State so bountifully provides for those youths able to remain in our high schools.

Is it a correct assumption that because the pupil's parents have means to continue him in a school away from work until 18, requiring thereby the State to invest, say, six hundred dollars in his education, these fortunate ones are thus divinely selected as most worthy for the State to invest six hundred dollars per child? What of those too poor to go on, or for whom the type of education now offered is unsuited? If the State by such expenditures indicates its fundamental belief that education for a youth of secondary age is a national asset worth the price, why should it limit it only to those able to attend high school the full time, and give nothing to those of the same age who have to go to work?

With the passage of the Part-Time School Act the boy or girl who cannot afford to attend high school the full day will not be deprived of a chance to continue his or her education and training. It is to be hoped that this Act will be recognized in its beneficial aspects and that it will be accepted as a boon and a blessing to the working boy and girl.

—Revised from Federal Bulletins.

THE NEVADA ACCEPTANCE ACT

With the passage and approval of the Nevada Acceptance Act—An Act to reaffirm “An Act to accept the benefits of an Act passed by the Senate and House of Representatives of the United States of America in Congress assembled, to provide for the promotion of vocational education, approved February 23, 1917,” approved March 24, 1917, the following results are obtained:

Section 1 reaffirms Nevada's acceptance of the Smith-Hughes Act.

Section 2 designates the State Treasurer as the custodian of moneys appropriated by Congress to Nevada for vocational education and also designates the manner in which the Treasurer shall pay out said moneys.

Section 3 designates the State Board of Education as the State Board for Vocational Education.

Section 4 designates the State Superintendent of Public Instruction as the executive officer of the State Board for Vocational Education and designates his duties.

Section 5 designates the powers of the State Board of Vocational Education. Subdivision (c) of this section is herein quoted as being of particular interest to local communities:

(c) The State Board for Vocational Education shall have authority to make studies and investigations relating to vocational education in such subjects; to promote and aid in the establishment by local communities of schools, departments or classes giving training in such subjects; to cooperate with

local communities in the maintenance as such schools, departments or classes; to prescribe qualifications for the teachers, directors and supervisors of such subjects and have full authority to provide for the certification of such teachers, directors and supervisors; to cooperate in the maintenance of classes supported and controlled by the public for the preparation of the teachers, directors and supervisors of such subjects, or to maintain such classes under its own direction and control; to establish and determine by general regulations the qualifications to be possessed by persons engaged in the training of vocational teachers.

Section 6 designates the fourth Mondays of March, June, September and December as the dates for at least four stated meetings per year of the State Board for Vocational Education.

Section 7 designates the authority to district or county school boards to establish and maintain vocational schools or classes and to raise and expend money for the establishment and maintenance of same.

Section 8 provides for the reimbursement from federal and state vocational funds to schools or classes giving vocational instruction in accordance with the requirements of the Smith-Hughes Act and the State Board for Vocational Education to an amount of not less than 50 per cent of the moneys expended for the salaries of teachers giving such instruction. This means that the State guarantees a contribution of not less than dollar for dollar expended for salaries in this way. For the salaries of vocational agricultural teachers, the State will reimburse three-fourths, one-fourth from the State Vocational Fund and one-half from the Federal Vocational Fund. This regulation applies also to part-time vocational schools or classes in trade, industrial and home economics subjects and for full-time day vocational home economics subjects. For the salaries of day industrial schools or classes, the State will reimburse one-half from the State Vocational Fund, the federal fund not being sufficient for this purpose. Nevertheless it is vitally essential that this type of school be encouraged and established. All teachers' salaries for vocational evening schools or classes will be reimbursed from the evening school fund as explained in another article.

The total allotments to vocational schools or classes should not exceed the total amounts available, the state board being only responsible to act within the limits of the funds legally available. The state board can assume no financial obligation other than that of apportioning the funds available therefrom. If at any time vocational education funds should fall short of meeting the obligations for a particular type of school or class, such funds as are available for said particular type will be apportioned pro rata. The state board will aim, however, to authorize no more vocational courses for a particular type of school or class than may be aided in full.

Section 9 provides for an appropriation of \$35,000 for the three-fourths biennium from July 1, 1919, to January 1, 1921. Since the state fiscal year does not coincide with the federal fiscal year, but begins on January 1, it is thought best to ask for the next biennial appropriation to be available between January 1, 1921, and January 1, 1923. The above appropriation of \$35,000 is based on a year's

expenditures to the amount of \$23,333.33. For the school year July 1, 1919, to July 1, 1920, the following budget is tentatively proposed:

Items	Federal vocational fund	State vocational fund	Local funds
AGRICULTURE-----	\$5,000.00	\$2,500.00	\$2,500.00
TRADES, HOME ECONOMICS AND INDUSTRIES-----			
1. Evening schools-----			
(a) Mining schools-----	2,333.33	9,700.00	
(b) Other evening schools-----			
2. Part-time classes (minimum if used at all)-----	1,666.67	833.33	833.33
3. Unit-trade classes-----		1,800.00	1,800.00
4. General industrial classes-----		500.00	500.00
5. Home economics (minimum)-----	1,000.00		
TEACHER TRAINING-----			
Agriculture-----	2,000.00	2,000.00	
Trades and industries-----		2,000.00	
Home economics-----	2,500.00	2,500.00	
Director's travel and office expense-----		1,500.00	
Totals-----	\$16,500.00	\$23,333.33	\$5,633.33
Grand total to be spent for vocational education in State of Nevada, July 1, 1919, to July 1, 1920-----	\$45,466.66		

Section 10 provides for a biennial report from the State Board of Vocational Education to the State Legislature, together with a detailed statement of the expenditures from federal and state vocational funds.

Section 11 provides for the repealing of all laws or parts of laws in conflict with this Act.

—R. A. J.

THE MINING SCHOOLS ACT

"An Act creating schools of mines in Virginia City, Tonopah, Goldfield, and in the Ely Mining District, Nevada, providing for the control of said schools and making appropriations therefor" virtually recreates in section 1 four of the mining schools already in existence, the Virginia City School of Mines, the Tonopah School of Mines, the Goldfield School of Mines, and one in White Pine County at a place or places to be designated by the County Board of Education of said county. There were, prior to approval of this Act, two mining schools in White Pine County—one at Ely and a travel school at McGill.

Section 2 provides that each of the aforesaid schools, on and after July 1, 1919, shall be conducted under the direction of the County Board of Education where such exists or by the district high school board, in cooperation with the State Board for Vocational Education. The mining school in White Pine County shall be conducted under the direction of the County Board of Education of said county; all other mining schools shall be conducted under direction of District Boards of School Trustees in the respective districts in which such schools are located. This places these secondary schools on the same basis for maintenance, supervision and direction as any other secondary vocational schools or classes. It is the intent of this Act that a closer and more careful supervision will be maintained by the local school authorities than by a semiannual visit of a State Supervisor as heretofore. A State Supervisor will continue to visit these schools for the purpose of itinerant teacher training, and the State Director for Vocational Education will visit them whenever necessary for the purpose of cooperation in carrying out the rules and regulations of the State

Board for Vocational Education. Another result of placing these secondary schools under supervision of local authorities is that of being able to meet the requirements of the Smith-Hughes Act, which provide for a part of their support from federal funds. The Act in no way indicates that a mining school must be conducted in the same building as any other secondary school of the respective community.

The various Schools of Mines have heretofore been conducted under the direction of the University of Nevada, with the possible exception of Virginia City, which was more directly under the control of the State Board for Vocational Education.

Section 3 provides for the support and salaries of the mining schools from July 1, 1919, to January 1, 1921, the sum of \$14,550, to be taken from the State Vocational Fund. It is the expectation that the Federal Vocational Fund will add \$3,500 to the salaries for the same period of time.

Section 4 provides for the support and salaries of the mining schools from January 1, 1919, to July 1, 1919, the sum of \$7,150, to be taken from the State General Fund. Support and salaries were provided to July 1, 1919, by the Legislature of two years ago, but on account of section 7 of this Act repealing those previous Acts it was necessary to virtually recreate that same support.

Section 5 provides that for the support and salaries of the mining schools after January 1, 1921, the Federal and State Vocational Funds may, under certain conditions, bear three-fourths of the salaries, which is tantamount to saying that the respective local communities shall bear not only one-fourth of the salaries, but the cost of all the equipment and supplies after January 1, 1921. Apparently, however, there is no good reason why the State should continue to furnish the entire support of these secondary schools any more than it should furnish the entire support of other secondary or high schools.

Section 5 further empowers respective Boards of County Commissioners to provide in tax levies of each preceding year for sufficient moneys to permit of county cooperation in the support of aforesaid schools. It is believed that the local communities will have ample time between now and January 1, 1921, to make adjustment for the change.

Section 6 provides that on or before July 1, 1919, all equipment, property and assets in the possession of these various schools shall be transferred, by the State Board of Vocational Education and any other boards having direct control, to the respective County Boards of Education or respective District Boards of Trustees.

Section 7 repeals all Acts in conflict with this Act.

—F. C. L.

THE PART-TIME SCHOOL ACT

“An Act to provide for the establishment of part-time schools and classes and to compel the attendance of minors upon such schools and classes” has been passed and approved for the first time in the State of Nevada.

Section 1 provides that in school districts where there shall reside or be employed, or both, not less than fifteen children between the ages of 14 and 18 who have entered upon employment, respective school boards shall establish part-time schools. If there are less than fifteen

such children either residing or employed in a given district, this Act does not make it mandatory to establish a part-time school in said district.

Section 2 designates that the type of instruction in part-time schools shall be supplemental to the work in which they are engaged, shall continue their general education, or shall promote their civic and vocational intelligence.

Section 3 provides that all children of the State shall attend some type of school under public supervision or control until the age of 18, unless employed and excused from attendance in accordance with the terms of sections 1, 3 and 5 of the State Compulsory Education Act. These sections read as follows:

1. When satisfactory evidence is presented to the Board of Trustees of the school district in which such child resides, that the child's bodily or mental condition is such as to prevent or render inadvisable attendance at school, or application to study. A certificate from any reputable physician that the child is not able to attend school, or that its attendance is inadvisable, must be taken as satisfactory evidence by any such board;

3. When satisfactory evidence is presented to the Board of Trustees that the child is being taught in a private school, or by a private tutor, or at home, by any person capable of teaching in such branches as are usually taught in the primary and grammar schools of this State;

5. When the Deputy Superintendent shall determine that the child's residence is located at such distance from the public school as to render attendance impracticable or unsafe.

Unless entered upon regular employment the child has a choice of either day or evening schools.

Section 4 provides for the registration with local school authorities of all boys and girls between the ages of 14 and 18, whether or not employed or attending school.

Section 5 provides that employers of children under 18 must notify proper school authorities of either the employment or discharge of such children.

Section 6 provides that when local school authorities deem it inexpedient to organize part-time schools or classes, they may petition the State Board for Vocational Education to be excused therefrom.

Section 7 designates not less than four hours per week between the hours of 8 a. m. and 6 p. m. for part-time schools or classes. To receive federal aid, the course must consist of not less than 144 hours per year.

Section 8 empowers the State Board for Vocational Education to establish rules and regulations and to expend certain moneys for proper enforcement.

Section 9 provides that whenever the hours for which a child between the ages of 14 and 18 may be employed shall be fixed by federal or state law, the hours of attendance upon a part-time school or class shall be counted as a part of the number of hours fixed as legal employment by federal or state laws. "An Act regulating the employment of children," approved March 25, 1913, provides for a maximum of 48 hours a week employment for boys under 16 and girls under 18, except as employed at domestic service or work on a farm.

Section 10 places responsibility upon the parents or guardians for sending children to school in accordance with provisions of this Act, and section 11 provides a penalty therefor.

Section 12 places responsibility also upon employers, and section 13 provides a penalty therefor.

Section 13 provides that officers charged with responsibility for enforcement of attendance upon regular schools, shall be charged with enforcement of attendance upon part-time schools or classes.

Section 14 provides for reimbursement from federal and state vocational funds to local communities for not less than one-half the salaries of vocational part-time teachers if schools or classes are conducted in accordance with the rules and regulations of the State Board for Vocational Education. The Federal Vocational Fund provides an allotment of \$1,666.66 and the State Vocational Fund not less than \$833.33 for part-time schools. This makes a total of not less than \$2,500 of federal and state funds to be expended for part-time salaries for the school year beginning July 1, 1919. If the local communities were to put up an equal amount, this would mean a total of \$5,000 to be spent for part-time schools in Nevada this coming school year. It is the expectation, however, that this allotment of \$2,500 federal and state moneys will be sufficient to provide for three-fourths of the part-time salaries, which will then mean a total of \$3,333.33 in the State for part-time salaries for this coming school year. If, for any reason, the allotment of \$2,500 should be insufficient for paying three-fourths of the part-time salaries, the state board would then be obliged to prorate the available funds.

Section 15 provides that this Act shall be in full force and effect on and after September 1, 1919, and section 16 provides that all fines collected shall be paid into the permanent school fund of the State.

—R. A. J.

PART-TIME TRADE AND INDUSTRIAL EDUCATION IN NEVADA

1. THE NEED FOR PART-TIME SCHOOLS IN THE UNITED STATES

Every year an army of untrained children in the United States is going out of the public schools. A large number go to work because the wage they can earn is regarded as necessary to the proper support of the family. Many of these children, however, leave not because that wage is absolutely indispensable to the maintenance of the family, nor because they and their parents are indifferent to the value of all education, but because they and their families, feeling the economic pressure, do not believe that the ordinary schooling prepares young people for their life work in a way that justifies the struggle necessary to keep them in school any longer. A small number of these young people have definite ideas as to what calling they wish to follow, and these, together with a few who have no definite aim, enter upon instruction in trade and industrial schools, apprenticeship or trade helper systems, correspondence courses, elementary technical schools or similar agencies for vocational training.

The majority, however, march directly from the school to the factory, from the classroom to the workshop, where there are no facilities for continuing their general education. They are untrained indus-

trially at the start, and, therefore, cannot profit, except in small degree, from the instruction given by journeymen, pieceworkers, and shop foremen.

Some form of public instruction must be set up to meet the needs of this untrained juvenile army. Evidently this instruction will achieve the desired end only in so far as it provides for such vocational training as will permit the continuance of wage-earning on the part of the pupils. One or both of two generally recognized types of schools or classes, evening and part-time, the former coming after the day's work, and the latter during a portion of the regular working day, will furnish the kind of education needed. For many reasons to be mentioned later, part-time are preferable to evening classes for youthful workers, and it is with part-time instruction that this article is particularly concerned.

The need for these schools is specially urgent today and their establishment as an integral part of the school systems of Nevada is imperatively necessary in order to provide for the normal demands of youths seeking training for gainful occupations.

The time has passed when the thinking public in Nevada has to be told that there is a real need for industrial education. When it comes to determining just what form of industrial training shall be given to supply the recognized need, opinions naturally differ.

Three general types of school have been developed as a result of long-continued discussions and considerations of the different needs to be provided for, namely, the all-day, the evening, and the part-time school.

The first two are named from the time of the day in which they are in session. The third, or part-time, is any school conducted for a limited number of hours during the regular working day. Such a school is open to minors and adults who have entered upon employment, and its several aims are to continue neglected or interrupted elementary education and to prepare for entrance into better occupations or to supplement and extend knowledge and skill in present occupations.

When the school aims to complete general education, it is designated a part-time continuation school; when it aims to increase skill and intelligence in a vocation other than that in which the pupils are employed, it is a part-time trade preparatory school; and when it provides training that is strictly supplementary and related to the employment of its pupils, it is a part-time trade extension school.

Within recent years many States have come to feel that their educational responsibilities toward their children were not terminated by the issue of a work permit and that no matter whether at work or in school, the minor was the educational ward of the State until he was properly fitted for life or reached an age of discretion. This awakened educational consciousness on the part of the State is a hopeful sign, especially as it has been fostered by labor itself, which has more than once assumed the attitude that the children leaving school may not be deprived of all their opportunities to improve their education and secure more knowledge. The longer we can keep the children of the Nation in contact with our public schools and our public-school teachers, the safer our civilization will be.

Employer, employee, and educator alike have come to realize that the many pupils who leave the public schools at an early age never

learn the relationship between the theory taught in school and the practices of the shop. A few hours' school instruction each week in related technical work, personal hygiene, shop and home sanitation, civics (in relation to daily problems), builds a tangible superstructure upon previous schooling which becomes a bond between the school and shop and State.

Between the ages of 14 and 18 a boy is just beginning to find himself as a unit in society and business, and he is then in need of continued training which is both practical and interesting and which will awaken in him a desire for civic intelligence and vocational efficiency. The evening school has not the same hold upon interest and attention as a part-time school, because the daylight classes of the latter are held during the working hours of the pupil and arouse, in consequence, a feeling of responsibility on the part of the employer of industrial education, and is often because of its night work, too severe a physical tax upon the vitality of a growing child.

2. THE SCHOOL MAN AND THE EMPLOYER AS FACTORS IN PROMOTING PART-TIME EDUCATION OF THE COUNTRY

The earlier laws placed the responsibility for both vocational and elementary education upon the master workman, thus carrying the school work into the shop; whereas the tendency in all modern legislation is to place the responsibility for vocational training upon the educational authorities, thus carrying shop work into the school. This can be done successfully only by a part-time school which has the heartiest cooperation from public-school men willing to face the issue with constructive and open-minded thinking. In the first place they must cease to think only of children in school and begin to think clearly of children at work. They must be neither indifferent to the man at work nor willing to assume that industry itself is perfectly able to care for the man and probably able to provide for the child. Already able to look upon the boy or girl as a potential citizen rather than as a potential scholar, they must go one step farther and think of them both as potential workers. The moment a school man becomes interested in a student as a prospective worker his cooperation in the vocational training of that student is assured. Again, the introduction of part-time education into a municipality will at once involve its school men in "life" problems and in forms of educational administration of which they have been ignorant and fearful. The part-time school apparently overthrows the time-honored ideal of the school as a basis for citizenship only. The general educational authorities must, however, recognize that the true value of citizenship is related directly to earning power and that consciousness of a capacity to earn a satisfactory wage is the best possible basis upon which to build a dependable citizenship for a self-reliant democracy.

The employer, also, must remove his opposition to the introduction of this system of vocational training. There is no longer any excuse for considering it an innovation of uncertain effect upon production in the factory. It will necessitate changes and increase administrative burdens, bringing such unaccustomed procedure as the rotation of men in a series of jobs, the shifting of men from shop to shop, the possible idleness of some machines for short periods, and various conditions more or less abhorrent to the methodical manufacturer and busi-

ness man. In return for this, however, the part-time system will provide him with more ambitious and better operatives, employees preparing and prepared for advancement, capable foremen, and perhaps even assistant superintendents. Of equal importance, although not so well recognized, it will increase the interest of employees in the work of the plant, with consequent increased length of service and contentment on the job. This naturally reduces the dreaded "turnover," and for this reason, if for no other, should appeal to foresighted employers. Those who have tried this part-time scheme for their apprentices, commonly testify that in plants where four to eight hours a week are devoted to schooling, there has been no decrease in production due to this loss of time. Even where the opposition of employers has not been great enough to be recognized as such, there has been no real feeling on their part of the need for this type of vocational training, and consequently there has been but little disposition to encourage it and work for it.

All things considered, now is the psychological time for the introduction of part-time education. The present world crisis is bringing us to the conscious realization that as a people we are insufficiently trained. The employer in every phase of industry and in every part of the country is now in need of men, especially men with more skill and self-reliance than the average. This need makes him particularly well disposed to listen to any proposition which will make it possible for him to secure more and better service. His cooperation is assured if he can convince himself that the part-time scheme is right.

From the side of the employee there has come little or no opposition. As has already been shown, young people themselves are favorable to a combination of school and work, and the trades unions, even when they have not been enthusiastic, have not been opposed to industrial education so long as it is publicly supported and controlled. They have emphatically, and usually enthusiastically, favored the part-time scheme over all other types, with the proviso on all occasions that instruction in both school and shop shall be thorough and practical.

The average citizen employer and wageworker in the United States has accepted without question the general proposition that he has nothing to contribute to educational work. Together with the professional school man, he has looked upon schooling as something set apart from real life. The fact is that the ordinary citizen has much to offer in the way of helpful suggestion and specific information for use in educational institutions, if he will only realize it and begin an intelligent study of the possibilities in this direction. Nowhere so much as in industrial education is this true, and in no form of industrial education is it more true than in evening and part-time classes.

3. FORMS OR TYPES OF PART-TIME SCHOOLS

Three forms of vocational part-time schools are now to be considered in greater detail, and what has already been said will have made the definition of these schools clear:

- a. The general continuation school.
- b. The trade preparatory school.
- c. The trade extension school.

a. The General Continuation School

The general continuation school, as the name implies, should devote

itself particularly to providing a general educational background upon which to build a superstructure of vocational training. It must determine what proportion of the total part-time instruction is needed for this work. Such information can be obtained by a survey of its pupils to find out how far they are below the minimum educational qualification, which may be described as being equivalent to that in general provided by an elementary grammar school. The character of its work, while depending upon this survey, must necessarily have a decided civic leaning, and at the same time be clearly connected with the vocational program, since these schools are established under authority given in that part of the Smith-Hughes Act which specifies that any subject given to enlarge the civic or vocational efficiency of pupils may be given in a part-time school. The school must safeguard the pupil from hasty and inefficient instruction, but it must be borne clearly in mind that the pupil's receptive period is brief and that he is both physically and mentally ready and eager to secure practical industrial training, and will not take kindly to an extended course which neglects his natural desires.

b. The Trade Preparatory School

The trade preparatory school must justify itself by actual success in taking pupils from one occupation and preparing them to enter another. The burden of proof that this can be well done in a part-time scheme rests with the school. Such schools or classes must select type trades usually learned either in a short apprenticeship or by not more than a year of "helper service," and must in each case determine that the amount of time available for instruction is adequate to give such a knowledge of the new trade as will be a permanent benefit to the learner.

Despite the ambition of its administration such a school must rigidly refrain from attempting to teach trades which, because of the length of time needed for their mastery, cannot properly be given in intermittent instruction. For instance, a trade requiring four years' apprenticeship at eight hours per day before the issuance of a journeyman certificate would require 1,200 or 1,400 weeks at eight hours per week of continuation school instruction if the school alone were depended upon to give all the training needed.

It is possible that the trade preparatory school may act somewhat like a prevocational school in assisting its pupils to "find themselves" in industry. The part-time trade preparatory school bears a closer relation to the all-day trade school than either of the other types.

c. The Trade Extension School

Part-time trade extension work will undoubtedly be the most popular in this country, as it has been abroad. Such schools are devoted exclusively to extending and amplifying the instruction which an apprentice is receiving during the day while regularly employed at the trade which he is studying in school.

The student receives instruction for a few hours a week; in some cases he may be a half day in the school and a half day in the commercial shop; in others he may have alternate days or alternate weeks in shop and in school; or two weeks of constant instruction may be followed by the same period on the shop floor. Still other courses are

laid out to cover the slack seasons, when apprentices in the trade may be excused for one, two, or three months of continuous school instruction. Whatever may be the arrangement regarding the time of instruction, certain fixed principles must be accepted by the trade extension school as a part of its general policy.

In common with the trade preparatory school, the trade extension school should prescribe for trade courses an educational prerequisite that will insure elementary school graduation or equivalent general continuation school work. It must seek out also every possible point of contact between the instruction in the school and the work which is being done by the pupil in the shop, even when it is only an indirect contact. Trade extension work must give the worker an appreciation of the entire trade and of his place in the whole scheme. Except in short unit courses it must confine its principal efforts to teaching the theory of the trade, leaving the skill to be provided in the commercial shop. In short unit courses, however, practical training along specific lines of trade processes and operations may be undertaken.

It is to be noted further that under the rulings of the Federal Board for Vocational Education, part-time schools may be opened to pupils training in commercial subjects. Whereas the Smith-Hughes Act excludes commercial and general training from the work of all-day and evening schools, it has not excluded such training from part-time schools, because of the clause that any subject given to improve the civic or vocational efficiency may be taught in such schools. Communities, therefore, may now establish part-time commercial classes and cooperative part-time commercial courses for those over 14 years of age already employed, and may secure federal aid for this work from the funds set aside for part-time instruction.

Chart of difference and similarities in the three types of part-time schools

Kind of school.	Trade extension.	Trade preparatory.	General continuation.
Controlling purpose.	To supplement daily work.	To prepare for a trade or industrial pursuit.	To extend and supplement general education.
Age of admission and maximum age.	Entrance, 14 years. No maximum.	Entrance, 14 years. No maximum.	Entrance, 14 years.
Necessary plant and equipment.	Varies according to trade or industry; may be small in case work is related subjects.	Must approximate that used in industry.	Usual classroom and laboratory manual training.
Minimum for maintenance.	Variable.	Variable.	Variable—Least cost of three types.
Character and content of courses of study.	Supplements daily work. Depends upon individuals.	Experiences from vocations studied.	Subjects to enlarge civic and vocational intelligence.
Length of course.	144 hours a year. Minimum.	144 hours a year. Minimum.	144 hours a year. Minimum.
Qualifications of teachers.	Master of trade or technical subjects or both.	Master of trade or technical subjects or both.	Teacher of experience in elementary or high school with appreciation of industry.
Aim for pupils.	To better fit for employment in work now engaged in.	To learn a trade while engaged in some other occupation.	To add to general education.

4. COOPERATION BETWEEN SCHOOL AND SHOP

All part-time work entails close and active cooperation between the school and the shop and a perfectly definite understanding as to what shall constitute the work and duties of each in the general plan. Such cooperation usually requires a reorganization of shop methods of handling apprentices. This can be accomplished best in the following ways:

By agreement as to just what trade experience the shop shall provide and just what technical education the school shall provide. Some sort of an advisory committee will be useful in this regard.

By trade agreements covering hours of work and hours of schooling; increased wage with increased shop training and school work; graduation of shop experiences; assurance of employment upon completion of schooling.

By coordination between shop experiences and school work. This may be established by a coordinator who has access to both school and shop, or by the part-time teacher who follows the boy into the shop and thus learns the boy's problems.

5. PRINCIPLES COMMON TO ALL PART-TIME EDUCATION

There are a few general principles common to all part-time education regardless of specific designation.

Every school should deliberately plan to improve industry and industrial methods of production and administration, through a study of the problems and difficulties continually presented in the schools. It should use every means, direct and indirect, to promote civic training without actually giving courses in civics.

Classes should be grouped according to age as well as mental capacity. The evening schools in the British Empire were a failure for years largely through the grouping of men and young boys in the same class.

Classes should be formed wherever most convenient, in school, store, factory, or shop, and should not be confined to educational buildings. The schools must aim to supply well-defined local needs rather than to borrow their courses from some general propaganda. Courses must have sufficient elasticity to meet the needs of individual pupils.

It is particularly necessary that instruction in the part-time schools be organized about specific needs because of the limited time during which workers are in schools, and because part-time education can be justified upon no other basis than that the school has a particular function and message for the group.

Each part-time class should be composed of workers having similar needs, and instruction should be organized about these needs.

—Revised from Federal Bulletins.

STATE ENGINEER'S OFFICE
CARSON CITY, NEVADA

SYNOPSIS

OF THE

WATER LAW OF 1913

AS AMENDED BY CHAPTER 253
STATUTES OF 1915

Including interpretations by the State Engineer and
rules and requirements relating to the determination
of existing rights, and the acquirement of new rights.

PAMPHLET NO. 7

Revised and Reprinted April, 1919

ISSUED BY

J. G. SCRUGHAM, State Engineer



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : JOE FARNSWORTH, SUPERINTENDENT
1919

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INTRODUCTORY

On March 22, 1913, a general law relating to the waters of the State was approved, superseding the statute enacted in the year 1907.

Many of the provisions of the new law were identical with the law of 1907. Pamphlet No. 5 was issued on May 1, 1913, containing rules and regulations adopted by the State Engineer under the authority of the Act.

On March 25, 1915, amendments to the Act of 1913 were approved, requiring a change in the method of procedure for the determination of existing rights. Practically no change was made in the law or the procedure prior to the time of the making of the order of determination by the State Engineer. Under the original law the order of determination of the State Engineer completed the proceedings unless the parties interested filed an action in the court against the State Engineer joining those adversely affected, praying for a reversal or modification of the order of determination.

Section 44 of the Act of 1913 recited that the order of determination was final if court action against the State Engineer was not commenced within six months after the filing of the order.

The amendments to the law, adopted in 1915, provide specifically for the filing of the order of determination of the State Engineer with the District Court, so that all interested parties have opportunity to file exceptions before the order becomes a court decree by the approval of the court in the form submitted. Provision is made for the hearing of the exceptions and the entry of a decree by the court definitely and finally determining the relative rights in and to the waters of any stream-system, subject to the usual appeal to the Supreme Court. Other minor changes were made in the law, but they are of no consequence except as to office details.

It is not intended that the interpretations of the statute included herein shall be taken as anything other than the view of this office, but they shall apply in so far as the law permits such interpretations to be covered by Rules and Regulations of the State Engineer.

Only a general synopsis of the law will be covered here, leaving the details to be taken from the statute.

Owing to the confusion which exists in the minds of many water users as to when it is necessary to file an application for water, the following remarks may be of some value:

On March 1, 1905, a law took effect which required all *new* appropriations of water to be acquired through applications to the office of the State Engineer.

All appropriations of water made prior to that date (March 1, 1905) did not require such application. The law requires that the extent of such rights be determined and the method of procedure therefor is fully covered in sections 18 to 58 of the law of 1913, as amended by chapter 253, Statutes of 1915.

Instead of an application being required for such rights, all users must, in order to have a proper determination made, file a "Proof of Appropriation." (See instructions under "Proofs of Appropriation.")

DETERMINATION OF EXISTING RIGHTS

Proceedings for the determination of relative rights on any stream-system may be instituted by an order of the State Engineer granting a petition of one or more water users of such system, or by the State Engineer on his own motion or order.

Notice by publication will be given in each instance of the pendency of the proceedings.

The first step in the proceedings will be the determination of the area of irrigated lands, their location, the location and carrying capacity of the ditches, the measurements of the water sources, and the names and addresses of the water users.

When the physical data are obtained, each water user on the system will be required to file a sworn statement of his claim to the waters thereof.

These claims will be abstracted and copies sent to each user for inspection. Also, the maps, plats, and measurements of areas, etc., will be open for the inspection of all interested parties for a period of ten days. Whenever possible the place designated for the inspection of data filed with, and collected by, the State Engineer will be selected for the convenience of the majority of the interested parties.

Contests may be filed by any interested party against any or all claims listed in the abstract. (See form for contest.)

The contests will be heard and decided by the State Engineer under rules hereinafter given.

The final order of determination of the State Engineer will be filed with the District Court selected to have jurisdiction thereof. All interested parties will be served with a copy of such order of determination and advised of the filing thereof with the District Court.

Parties objecting to the order of determination of the State Engineer may file exceptions with the District Court within the time set by it, notice of which shall be given to all parties.

If no exceptions are filed within the time allowed, it becomes the duty of the court to affirm the order of determination of the State Engineer.

Exceptions to the order of determination will be heard by the court under the usual rules governing civil actions.

Water Commissioners will be appointed to apportion the water in accordance with the determination of the State Engineer, pending the decree by the court, unless steps are taken by aggrieved parties to stay the operation of such order.

INTERPRETATIONS BY STATE ENGINEER

Section 1 of the law provides that the water of all sources of supply within the State belongs to the public. The question specifically includes underground waters.

The State Engineer interprets this section to mean underground waters in defined channels or bodies. Percolating waters, the course and boundaries of which are incapable of determination, do not come within the meaning of this section.

A law specifically eliminating percolating waters from the operations of this Act was passed by the Legislature of 1915 and approved March 24, 1915. (Chapter 210, Stats. 1915.)

By reading section 2 with section 1 it is evident that the State recog-

nizes the usufruct right, to the extent of beneficial use, of those who, prior to the adoption of the water code, appropriated and used water.

For the purpose of determining the extent of existing usufructuary rights and regulating the use thereof, sections 18 to 58, inclusive, as amended by chapter 253, Stats. 1915, provide a complete method of procedure.

Section 11 provides that the measurement of water shall be made at the point in the ditch where it enters or becomes adjacent to the land to be irrigated.

This provision is interpreted to mean that the quantity of water allowed in the approval of a permit is to be based on the duty of water as provided by statute (viz, 1 cubic foot per second per 100 acres) measured at the land, and that the losses between the point of diversion and land will be determined and allowed by the Commissioners in distributing the water.

The losses can only be ascertained by measurements and experiments, hence it would be manifestly unjust to adopt a standard duty of water at the point of diversion, without considering the quantity diverted, the length of the canal and the character of material through which it passes. The appropriator must provide a conduit which will result in a minimum loss of water.

Section 21 reads in part as follows: "In the further event that said surveys are executed and maps are prepared and filed with the State Engineer at the instance of the person claiming a right to the use of water, the proportionate cost thereof, as determined by the State Engineer, to be assessed and collected for the adjudication of the relative rights, as hereinafter provided, shall be remitted to said claimant after the completion of the determination."

Referring to section 27 of the Act, it is found that the following fee is to be collected for filing proof of right: 15 cents per acre for each acre of irrigated lands up to and including 100 acres, 10 cents for each acre in excess of 100 acres and up to and including 1,000 acres, and 5 cents per acre in excess of 1,000 acres; 25 cents for each theoretical horsepower up to and including 100 horsepower, 15 cents for each horsepower up to and including 1,000 horsepower, and 5 cents for each horsepower in excess of 1,000 horsepower as set forth in the proof of appropriation.

A minimum fee of \$5 for each proof filed is required.

Such fees are required for the purpose of covering the cost of surveys and determinations and for recording the proofs in the office of the State Engineer and the certificates in the office of the County Recorder.

It has been found that many of the water users prefer to make their own surveys and maps, owing to the fact that engineers are employed permanently by them, and also for the reason that additional data, not required or taken by the State in surveys for an adjudication, are sometimes desired and can be acquired at little or no additional cost to the appropriator if he is permitted to do his own work.

The rule has been adopted, therefore, permitting surveys and maps to be made by the water users, and the charge for surveys above referred to is remitted at once, save and except the minimum fee and the cost of verifying the surveys and maps by examination of the land.

For instance, if a proof of appropriation for 500 acres of land is filed,

the State Engineer must collect 15 cents per acre for the first 100 acres, or \$15; 10 cents per acre for the remaining 400 acres, or \$40, making a total of \$55.

If the applicant offers for filing a map made at his own expense, correctly showing the area of irrigated lands and location and size of ditches, as provided by the regulations, the State Engineer would collect only the minimum fee of \$5 for recording purposes, and the cost of verifying the map by examination.

Many of the claimants are capable of making their own surveys, and thus by refunding the above proportionate amount of the fee, the work can be hastened very materially and result in a saving to the claimant.

Section 45 reads: "In any suit which may be brought in any District Court in the State for the determination of a right or rights to the use of water of any stream, all persons who claim the right to use the waters of such stream and the stream-system of which it is a part shall be made parties. When any such suit has been filed, the court shall, by its order duly entered, direct the State Engineer to furnish a complete hydrographic survey of such stream-system, which survey shall be made as provided in section 20 of this Act, in order to obtain all physical data necessary to the determination of the rights involved. The cost of such suit, including the costs on behalf of the State and of such surveys, shall be charged against each of the private parties thereto in proportion to the amount of water right allotted. In the case of any such suit now pending or hereafter commenced the same may at any time after its inception, in the discretion of the court, be transferred to the State Engineer for determination as in this Act provided."

This section of the Act is intended to cause to be made a general adjudication of an entire stream-system whenever the rights to the waters thereof become involved to the extent that a suit is necessary to define them.

It will be noted the cost of the suit is to be charged against each of the water users in proportion to the amount of right allotted. It is specifically designed to avoid a multiplicity of suits.

RULES AND REGULATIONS **Relating to the Determination of Vested Rights**

The following rules are hereby adopted by the State Engineer to carry out the powers conferred by law, this, the 1st day of May, 1915:

DETERMINATION OF EXISTING RIGHTS

Petitions requesting the determination of the relative rights on any stream should conform with the following form:

PETITION FOR DETERMINATION OF WATER RIGHTS

BEFORE THE STATE ENGINEER OF NEVADA

In the Matter of the Determination of the Relative Rights to the Waters of.....
.....and Its Tributaries.

To the State Engineer of the State of Nevada:

The undersigned water users of the above-named stream-system in support of this petition for determination of the relative rights therein allege:

First—That the waters of said stream-system are claimed by various parties, all of whom are diverting and using portions thereof.

Second—That a determination of the relative rights is necessary to insure the petitioners the waters to which they are entitled.

Third—That our names and postoffice addresses are as follows:

<i>Name</i>	<i>Postoffice Address</i>	<i>Acreage Irrigated</i>
.....

Fourth—That, to the best of our knowledge and belief, the names and addresses and acreage irrigated by other users are as follows:

<i>Name</i>	<i>Postoffice Address</i>	<i>Acreage Irrigated</i>
.....

Wherefore, we pray that a determination of the relative rights of the various claimants to the waters of said stream be made in accordance with sections 18 to 58, inclusive, chapter 140, Statutes of Nevada, 1913, as amended by chapter 253, Statutes of 1915.

Dated at.....this.....day of....., 19.....

....., Petitioner.
....., Petitioner.
....., Petitioner.

The following form of notice will be published when the proceedings begin for the determination of the rights of any stream:

NOTICE OF ORDER AND PROCEEDINGS TO DETERMINE WATER RIGHTS

BEFORE THE STATE ENGINEER OF NEVADA

In the Matter of the Determination of the Relative Rights to the Waters of.....
.....and Its Tributaries.

To Whom It May Concern:

You are hereby notified that the State Engineer will begin the proceedings for the determination of the relative rights to the waters of....., and its tributaries, situate in.....County,....., on the.....day of..... All claimants to rights in the waters of said stream-system are required to make proof of their claims in the manner prescribed by law.

By order of the State Engineer.

.....
State Engineer.

Dated at Carson City, Nevada, this, the.....day of.....

NOTICE AND ORDER FOR TAKING TESTIMONY

BEFORE THE STATE ENGINEER OF NEVADA

In the Matter of the Determination of the Relative Rights to the Waters of.....
.....and Its Tributaries.

To Whom It May Concern:

Notice is hereby given that the State Engineer will begin the taking of proofs of the rights in and to the waters of the....., and its tributaries on theday of.....

Proofs will be received at the office of the State Engineer at Carson City, Nevada, for the period of sixty days, ending on the.....day of..... as provided by section 22, chapter 140, Statutes of 1913, after which no proofs will be received by the State Engineer except as provided in section 25, chapter 140, Statutes of 1913, as amended by chapter 253, Statutes of 1915, to which reference is hereby made.

By order of the State Engineer.

Dated at Carson City, Nevada, this, the.....day of.....

State Engineer.

When the maps and determinations and proofs are complete, notice of exhibition of same will be given as follows:

NOTICE TO CLAIMANTS FOR INSPECTION OF EVIDENCE

BEFORE THE STATE ENGINEER OF NEVADA

In the Matter of the Determination of the Relative Rights to the Waters of.....
.....and Its Tributaries.

To Whom It May Concern:

You are hereby notified that all maps, plats, data, and evidence heretofore collected by, or filed with, the State Engineer in the proceeding for the determination of the relative rights to the waters of.....and its tributaries, will be open for inspection for a period of ten (10) days, beginning on.....the.....day of..... 19...., and ending on.....the.....day of..... 19...., Sundays and legal holidays excepted, from 9 o'clock to 12 o'clock a. m., and from 1:30 o'clock to 5 o'clock p. m. at.....County, Nevada.

All contests or objections must be filed with the State Engineer on or before....., 19....

This notice is given pursuant to sections 28 and 29, chapter 140, Statutes of Nevada, 1913.

By order of the State Engineer.

State Engineer.

Dated at Carson City, Nevada, this, the.....day of.....

PROOF OF APPROPRIATION

Claimants to rights to the use of water shall use the following forms in filing their proofs. These forms will be forwarded, free, to any claimant upon application to the State Engineer:

PROOF OF APPROPRIATION OF WATER FOR IRRIGATION

From.....

Name of natural water source

Through.....

Name of ditch, flume, or pipe line

....., the undersigned, being first duly sworn, deposes and says that the facts relative to the appropriation of water by.....are full and correct to the best of his knowledge and belief.

If proof is not made by claimant, deponent should state on this line by virtue of

.....
what authority he represents the claimant.

(1) Name of claimant.....
Address....., County of....., State of.....

(2) Means of diversion employed.....
Dam and ditch, pipe line, flume, etc.

(3) The date of survey of ditch, canal, or pipe line was.....

(4) The construction of the ditch or other works was begun.....and completed.....

(5) The dimensions of the ditch or canal as originally constructed were: Width on bottom.....feet, width on top.....feet, depth.....feet, on a grade of.....feet per thousand feet.

(6) The conduit has (has not) been enlarged.

Note—If enlargement or extension of ditch was made, supply information under (7) and (8)

(7) The work of enlargement of the ditch or canal was begun.....and completed.....

(8) The dimensions of the ditch or canal as enlarged are: Width on bottom.....feet, width on top.....feet, depth.....feet, on a grade of.....feet per thousand feet.

(9) The claimant is (is not) an owner in the above-described conduit.

If claimant is an owner in the conduit, state interest held on this line

(10) The nature of the title to the land for which the water right is claimed is

(11) Crops of.....have been grown upon the land irrigated.

(12) The water has been used for irrigation from.....to.....of each year.

(13) The water was first used for irrigation by claimant or.....grantors in the year....., when.....acres were irrigated in the.....of Sec....., T....., R....., E.,

(14) The additional number of acres first irrigated in subsequent years was as follows:

Year	.....	acres in the.....	of Sec.....	T.....	R.....	E.
	.....	acres in the.....	of Sec.....	T.....	R.....	E.

Remarks:.....
(Append a sheet if necessary)

(15) The maximum acreage irrigated in any year was.....acres.

(16) The water claimed has (has not) been used for irrigation each and every year since the right was initiated.

(17) The years during which no water was used for irrigation or during which the full water right was not used were.....

If water was not used, or used in

reduced quantity at any time, full information as to causes and duration of non-

use should be given, appending a sheet if necessary

(18) The claimant's water right was (was not) recorded in the office of the County Recorder of.....County, said record being at page.....of Book.....of....., and being a claim for.....of water for the irrigation of.....acres of land in the following legal subdivisions:

Note—Failure to record in the county in no way invalidates a water right, but if ditch or right was so recorded, supply full information under (18).

(19) The map provided by the State Engineer and attached hereto as a part of this proof is hereby accepted as correctly showing the ditch lines or irrigation works diverting or conveying the water claimed and the lands irrigated.

(20) Water from the source given and through the works described is also used for the following purposes other than irrigation:

(21) The character of the soil is..... The soil needs.....
(Sandy, gravelly, loam)
acre-feet per annum to properly irrigate the crops. A continuous flow of
.....cubic feet of water per second, during the irrigation season of
.....months, is needed to irrigate each 100 acres of land.

Remarks:.....

Subscribed and sworn to before me this.....day of....., 19.....

Notary Public in and for the County of.....
My commission expires.....

**PROOF OF APPROPRIATION OF WATER FOR STOCK-
WATERING PURPOSES**

From.....

Name of natural water source

Through.....

Name of ditch, flume, or pipe line

....., the undersigned, being first duly sworn, deposes and says that
the facts relative to the appropriation of water by.....are full and correct
to the best of his knowledge and belief.

If proof is not made by claimant, deponent should state on this line by virtue of
what authority he represents the claimant

(1) Name of claimant.....
Address....., County of....., State of.....

(2) The means of diversion employed.....
Dam and ditch, pipe line, flume, etc.

(3) The water is impounded in.....
Troughs, reservoirs, tanks, etc.

(4) The construction of the ditch or other works was begun.....
and completed.....

(5) The nature of the claimant's title to the land upon which the works are
located is

(6) The claimant's water right was (was not) recorded in the office of the
County Recorder of.....County, at page.....of Book.....of.....

(7) The approximate number of animals watered by the claimant during the
first year was....., and said watering was conducted for an approxi-
mate period of.....days during each of the following months.....

(8) The approximate number of animals watered by claimant in subsequent
years was as follows:.....

(9) The amount of water which it has been necessary to divert for the said pur-
pose has been.....cubic feet per second.
(40 miners' inches is equal to 1 cubic foot per second)

(10) The water is diverted from its source at.....feet
True bearing to nearest 5 minutes distance
from the.....corner of Section....., T....., R....., E., Mount
Diablo Base and Meridian.

NOTE—Information under (10) must invariably be given when a public
corner is within 6 miles, unless the State Engineer consents to some
other form of description.

(11) The works are located at.....
Describe as within a 40-acre subdivision of public

survey or by a tie in same manner as under (10)

Remarks:.....

Subscribed and sworn to before me this.....day of....., 191.....

Notary Public in and for the County of.....
My commission expires....., 191.....

PROOF OF APPROPRIATION OF WATER FOR POWER, MINING OR MILLING

From.....
Through.....

Name of natural water source

Name of ditch, flume, or pipe line

....., the undersigned, being first duly sworn, deposes and says that the facts relative to the appropriation of water by.....are full and correct to the best of his knowledge and belief.

If proof is not made by claimant, deponent should state on this line by virtue of what authority he represents the claimant.

- (1) Name of claimant.....
Address....., County of....., State of.....
- (2) The means of diversion employed.....
(Dam and ditch, pipe line, flume, etc.)
- (3) The date of the survey of ditch, canal, or pipe line was.....
- (4) The construction of the ditch or other works was begun.....and completed.....
- (5) The dimensions of the ditch or canal as originally constructed were: Width on bottom.....feet; width on top.....feet; depth.....feet; on a grade of.....feet per thousand feet.
- (6) The amount of water claimed is.....second-feet.
- (7) The conduit has (has not) been enlarged.
NOTE—If enlargement or extension of ditch was made, supply information under (8) and (9).
- (8) The work of enlargement of the ditch or canal was begun.....and completed.....
- (9) The dimensions of the ditch or canal as enlarged are: Width on bottom.....feet; width on top.....feet; depth.....feet; on a grade of.....feet per thousand feet.
- (10) The claimant is (is not) an owner in the above-described conduit.....

(11) The nature of the title to the land upon which the works are located is.....

(If claimant is an owner in the conduit, state interest held on this line.)

(12) If works are not completed give description of work already done.....

- (13) The water has been used for power (mining) (milling) from.....to.....of each year.
- (14) The water was first used for power (mining) (milling) by claimant or.....grantors in the year....., when.....horsepower was generated.
- (15) The maximum power generated in any year was.....horsepower.
- (16) The years during which no water was used for power (mining) (milling) or during which the full water right was not used were.....
(If water was not used,

or used in required quantity at any time, full information as to the cause and duration of nonuse should be given, appending a sheet if necessary.)

(17) The claimant's water right was (was not) recorded in the office of the County Recorder of.....County, said record being at page.....of Book.....of....., and being a claim for.....of water for generating power (mining) (milling).

(NOTE—Failure to record in the county in no way invalidates a water right, but if a ditch or right was so recorded, supply full information.)

- (18) The map provided by the State Engineer and attached hereto as a part of this proof is hereby accepted as correctly showing the ditch lines or other works diverting or conveying the water claimed, to the point of use.
- (19) Water from the source given and through the works described is also used for the following purposes other than power (mining) (milling).....

(20) Remarks:

Subscribed and sworn to before me, this.....day of....., 191.....

Notary Public in and for the County of.....
My commission expires.....

**PROOFS OF APPROPRIATION OF WATER FOR IRRIGATION
PURPOSES**

1. A separate proof shall be required for each source of water supply.
2. A separate sheet shall be required for each ditch from the same source.
3. Each sheet shall be signed by the claimant or his authorized agent, and the last sheet of each proof must be subscribed and sworn to before an officer authorized to administer oaths.
4. The original source from which the water supply is derived should be given by name.
5. The ditches which divert the water should be given by name. In the event that they cannot be designated by any particular name, the claimant should number them consecutively, commencing with the first diversion from the source, beginning with number 1. The numbers will apply to the claimant's ditches only.
6. The proof should be signed and acknowledged by the claimant. In instances where the proof is signed by any other than the claimant, the power of attorney authorizing the signature must accompany the proof.
7. In cases of corporations, where the proof is not signed by an officer authorized under the laws, a resolution of the board of directors authorizing the signature, must accompany the proof.
8. *Under Statement No. 3:* Give the date of the original location, and the date of the survey of the ditch, canal, or pipe line.
If the ditch was constructed without a survey, it should be so stated.
9. *Under Statement No. 4:* Use a separate blank form for each ditch, so as not to confuse them.
10. *Under Statement No. 9:* State if the ditch or any interest therein is the property of the claimant, or if the water is obtained through the ditch by permission or agreement.
11. *Under Statement No. 10:* State if the land is held under lease, patent from State or Government, possessory or contract title.
12. *Under Statement No. 12:* The period that water is actually beneficially used for irrigation should be named, giving the day of the month when first diverted for irrigation each year and when last used for irrigation each year.
13. *Under Statement No. 13:* The actual number of acres of land irrigated the year that water was first obtained for irrigation from the source. The location of the land should be definitely stated by subdivision, section, township, and range. If on unsurveyed land, take the description from the map.
14. *Under Statement No. 14:* **Give only the additional land irrigated in each of the subsequent years when new land was added.** For instance, under No. 13, should you state that 160 acres were irri-

gated in 1865; then proceeding to No. 14, if you irrigated 40 additional acres in 1866 and 40 additional acres in 1869, the statement should appear as follows under No. 14:

1866—40 acres in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec....., T....., R.....

1869—40 acres in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec....., T....., R.....

and so on until all of the land is shown under the year it was first irrigated.

15. *Under Statement No. 15:* This should show the total number of irrigated acres in any one year for which the right is claimed at present.

16. *Under Statement No. 18:* State if possible whether or not the water rights were recorded in the county; also give the page and book of record. If you can supply a copy of the record, do so as evidence of your claim.

The record in the county, if there be one, is not conclusive evidence of the right.

The failure to record in the county does not invalidate the right.

17. *Under Statement No. 21:* State fully any matters in relation to the water rights that will aid the State Engineer in obtaining a proper understanding of the claim. Give the succession of title briefly when you can, if the original locator is not the claimant. If parts of the land have been abandoned and ditch changes have been made, state fully what they are.

18. The proofs will be numbered and the claimant notified thereof. All correspondence should refer to the number assigned by the State Engineer.

PROOF OF APPROPRIATION OF WATER FOR STOCK-WATERING PURPOSES

The rules applying to Proofs of Appropriation for Irrigation Purposes shall apply to Proofs for Stock-Watering Purposes where applicable.

Under Statement No. 9: Give the actually measured flow of water which has been used.

Under Statement No. 10: The location by legal subdivision or by course and distance to a government corner must be given. This will insure protection in cases where subsequent applications are made.

PROOF OF APPROPRIATION OF WATER FOR POWER (MINING) (MILLING)

The rules applying to Proofs of Appropriations for Irrigation Purposes shall apply to Proofs for Power (Mining) (Milling), and other purposes where applicable.

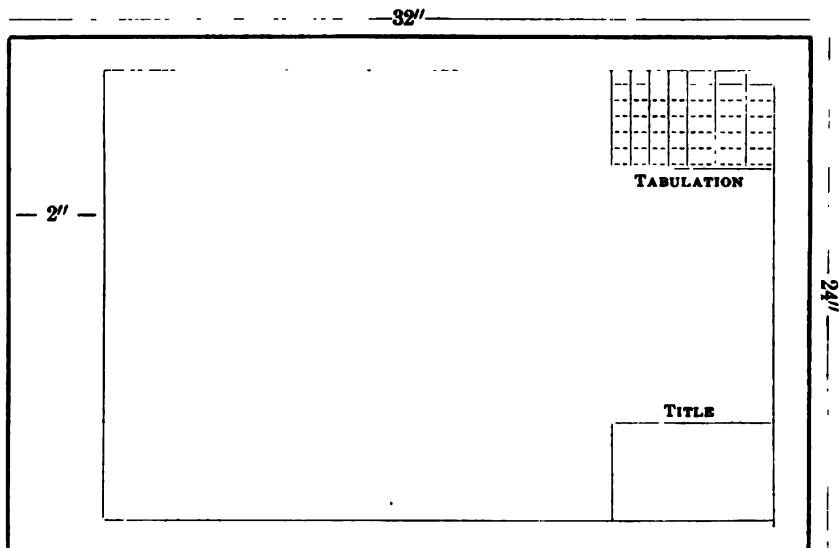
FEEES

1. The amount of fees named in section 27 of the Act must accompany the Proof of Appropriation in all cases. (See on page 5, relative to refunds of portion of fees.)

2. All proofs of appropriation will be examined and checked with the map before filing. In the event that discrepancies occur, or corrections are necessary in the proof, the State Engineer reserves the right to return it for correction without filing.

3. In all such cases the matter requiring correction will be stated in the notice returning the proof.

DIAGRAM OF MAP



MAPS

Maps to accompany Proofs of Appropriation shall be designated "Cultural Maps."

The following rules and regulations shall apply to such maps. (See requirements for maps under Applications to Appropriate Water, p.23.)

Maps must show:

1. The boundaries of the lands embodied in the tract owned and controlled by the claimant for which claim to water is made.
2. The location of the main and lateral ditches supplying the lands with water, and the point of diversion from the main source. If the point of diversion from the main source is far removed from the land, a disconnected tie showing the source and diversion may be made on the same plat with the irrigated land.
3. The size of the main ditch and the principal laterals must be shown, together with the grades of each.
4. The lands should be indicated in forty-acre tracts, showing the kind of culture of each parcel. The outlines of the various kinds of crops should be noted when they do not conform to the legal subdivisions.

Use crayon coloring to designate the different kinds of culture. For convenience and uniformity the following colors have been adopted to show each kind of culture:

- a. Alfalfa, color in dark green;
- b. Meadow, color in light green;
- c. Garden culture of all kinds, color in blue;
- d. Sagebrush, color in gray;
- e. Grain lands, color in yellow.

All other culture should be left uncolored and indicated by lettering on the map.

5. The boundary lines of the lands owned by the water user should

11. If the lands of each party are such that they cannot be shown on a single map of the above dimensions, separate maps of the same size should be made, and the oath lettered on the first sheet.

12. Tracings of maps will be made for the actual cost of such work. Blue-prints of maps will be furnished for 10 cents per square foot. White prints will be furnished at cost.

13. Any person desiring to trace a map after it has been filed, may do so in the office. Maps shall not be taken from the office after being filed, except when in possession of office employees.

14. Ink must not be used in tracing the maps or in copying the records.

CONTESTS

Contests filed against any claim should be made in the following form:

FORM OF CONTEST

IN THE OFFICE OF THE STATE ENGINEER OF NEVADA

Contest of.....v.....

In the Matter of the Determination of the Relative Rights to the Waters of.....
.....and its Tributaries.

Comes now....., whose postoffice address is....., and objects to the granting of the claim of....., filed in the office of the State Engineer and listed in the Abstract of Claims in the above-entitled matter, and for grounds of contest respectfully alleges:

1. That I am an appropriator and user of water from the above stream-system; that the water claimed by me has been beneficially used by me (or my predecessors) continuously since the year....., to the present time.

2. That the claim of.....as shown in the Abstract of Claims in the above matter is.....

(Here state the grounds of contest specifically. The particu-

lar dates or areas, or both, which are alleged to be in error should be definitely stated.)

WHEREFORE, Contestant prays that the contestee be required to appear and answer the contest herein, and after due investigation and hearing, a finding be made modifying (rejecting) said claim.

.....
Contestant.

State of Nevada, County of.....ss.

....., being first duly sworn, deposes and says, that he has read the foregoing contest and knows the contents thereof and that the same is true of his own knowledge, except as to the matters which are therein stated on information and belief, and as to those matters he believes it to be true.

Subscribed and sworn to before me this.....day of....., 19.....

.....
Notary Public.

HEARINGS

1. The general place of all hearings before the State Engineer will be at his office in Carson City, Nevada. Whenever possible the State Engineer shall enter an order naming the place of hearing for the convenience of the majority of the parties interested. All hearings shall be public.

2. Parties to the hearing may appear in person or by counsel, at their own discretion.

3. If either party should fail to appear at the time set, the State Engineer may take the testimony of the party appearing if, in his opinion, such course is desirable. The State Engineer reserves the privilege of examining the witnesses, or either party, to the proceeding.

4. New or additional pleadings may be filed by permission of the State Engineer. In such cases the adverse party must be served with a duplicate, and he shall be given such time to answer as the State Engineer may prescribe.

5. Motions for postponement of a hearing will be granted only when there appears good and sufficient reasons therefor.

6. The testimony and record in all proceedings for the determination of the relative rights to the use of the waters of any stream-system shall be reported by the stenographer appointed by the State Engineer. The record shall be confined strictly to material matters. Arguments and statements of counsel, other than objections and exceptions, shall only be entered at their expense, and shall not be considered part of the record.

7. Any rulings of the State Engineer made during the progress of the hearing shall be made a part of the record.

8. The order of determination of the State Engineer will be tabulated and printed in pamphlet form. Each party to the proceeding will be supplied with a copy, which shall be considered notice of the final decision of the State Engineer.

PETITION FOR REHEARING

Any party to the proceedings for the determination of the relative rights may apply for a rehearing within sixty days of the date of the entry of the order establishing the rights.

The petition must be in writing and filed with the State Engineer, and must clearly and fully set forth the grounds upon which application is made. The petition shall be signed and verified.

A copy of the petition shall be served upon the adverse party by the applicant.

RULES RELATIVE TO THE APPROPRIATION OF WATER BY APPLICATION

Applications to appropriate water may be made by citizens or persons who have legally declared their intentions to become such, and by corporations authorized to do business in Nevada.

All applications to appropriate water shall be made upon a blank form furnished by the State Engineer, free of cost, upon application therefor.

APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF NEVADA

Date of first receipt and filing in State Engineer's office.....

Returned to applicant for correction.....

Corrected application filed.....

The undersigned....., of.....County of

Name of applicant

..... State of....., hereby make application for permission to appropriate the public waters of the State of Nevada, as hereinafter stated. (If applicant is a corporation give date and place of incorporation.)

1. The source of the proposed appropriation is.....
(Name of stream, lake, or other source)

2. The amount of water applied for is.....second-feet.
(One second-foot equals 40 miner's inches)

3. The water to be used for.....
(Irrigation, power, mining, manufacturing, domestic, or other use)

4. The water is to be diverted from its source at the following point:.....
(Describe as

being within a 40-acre subdivision of public survey, or by course and distance to
.....
a section corner. If on unsurveyed land it should be so stated)

If the water is to be used for irrigation, supply the following information :

- (a) Number of acres to be irrigated is.....
(b) Description of land to be irrigated.....

(Describe by legal subdivision, or if on unsurveyed land it should be so stated and a description provided in accordance with special instruction from the State Engineer when application is returned for correction.)

- (c) Irrigation will begin about.....and end about.....of each year.
Month Month

If water is to be used for power, mining, transportation, or other use, supply the following information :

- (d) Power to be developed is.....horsepower.
(e) Works to be located.....
(Give 40-acre subdivision on which works will be located,

or locate by course and distance to a section corner)

- (f) Point of return of water to stream.....
(Describe in same manner as point of diversion)

- (g) Remarks :
Description of proposed works

(State manner in which water is to be diverted, whether by dam or other works, whether through pipes, ditches, flumes, or other conduits. If water is to be stored in reservoirs it should be so stated and the location of the reservoirs should be given with reference to the legal subdivisions.)

5. Estimated cost of works.....
6. Estimated time required to construct works.....
7. Remarks :

For use of applicant

....., Applicant.
By.....

Compared.....
This sheet inspected....., Engineer.

APPROVAL OF STATE ENGINEER

This is to certify that I have examined the foregoing application, and do hereby grant the same, subject to the following limitations and conditions :

The amount of water to be appropriated shall be limited to the amount which can be applied to beneficial use, and not to exceed.....cubic feet per second.

Actual construction work shall begin on or before.....

Proof of commencement of work shall be filed before.....

Work must be prosecuted with reasonable diligence and be completed on or before.....

Application of water to beneficial use shall be made on or before..... Proof of the application of water to beneficial use must be filed with the State Engineer on or before.....

Witness my hand and seal this.....day of

.....
State Engineer.

INSTRUCTIONS TO APPLICANTS

Applications should be made out in detail on the form prescribed by the State Engineer.

Applications should be typewritten or filled out with ink.

An application is not a permit to appropriate water until after its

approval by the State Engineer. Upon approval (or rejection) of any application, a copy of the original application, with such approval or rejection endorsed thereon, will be returned to the applicant. The terms of the permit will show on the endorsement, and be a guide for the applicant.

The following rules should be complied with in making application :

Under Question No. 1

Separate applications must be made for each source; *provided*, that when the numerous streams have their confluence above the point of diversion one application will serve to appropriate the water, by giving the name of the main stream at the point of diversion. The application should state the name of the stream, including its tributaries.

Under Question No. 2

The amount of water applied for should be limited to the amount that can be put to beneficial use. The statute provides that this amount shall not exceed one one-hundredth of one cubic foot per second for each acre of land irrigated; the measurement to be taken where the main ditch enters or becomes adjacent to the land to be irrigated. Therefore there shall be allowed a continuous flow of one second-foot of water for each one hundred acres of land irrigated. The amount should be stated in cubic feet per second instead of in miners' inches. (One cubic foot per second is equal to forty miners' inches.) (One acre-foot of water is equal to 43,560 cubic feet, or the amount of water necessary to cover an acre of ground one foot deep.)

Under Question No. 3

Ordinarily only one use of water can be named in each application. If domestic purposes is included, however, two uses can be named. For instance, if the application states "For Irrigation and Domestic Purposes" it shall be allowed; but if "Power and Irrigation" are named in one application it shall not be allowed, but the application will be returned for correction. In certain cases where water is to be stored in a reservoir, and where the water is conveyed from the reservoir in a ditch owned by the same party, two uses, "Power and Irrigation," might be named, where power can be generated from the ditch, but in such cases it must be clearly shown how the two uses can be completed.

Under Question No. 4

The point of diversion is one of vital importance in the application, as upon the location of the point of diversion depends the question of interference with prior rights. The point of diversion must be stated as being within a forty-acre legal subdivision, or, if on unsurveyed land, it must be tied by course and distance to the nearest corner of a legal subdivision, if such corner is within six miles. If no corner is found within six miles, the point of diversion should be tied to some definite and fixed monument or object.

Except under special conditions, there shall be named only one point of diversion in each application, for the reason that an entire stream could be covered by one application if more than one point of diversion were permitted to be named in each filing. In cases where the diversions, if there be more than one, are on the same 40-acre tract, and are

required to economically handle the water, the application for more than one point of diversion will be considered.

Under Subdivision (a)

The total number of acres of land should be stated with reasonable accuracy. The quantity of water allowed in the application, endorsed thereon by the State Engineer, is determined by the number of acres to be irrigated as well as the amount of unappropriated water in the stream.

Under Subdivision (b)

The description of the land to be irrigated must be stated by legal subdivisions. In the event that the land proposed to be irrigated is unsurveyed, then give the approximate location of such land, together with the township and range wherein such land is situated.

Under Subdivision (c)

Give the time when the use of water for irrigation purposes will begin, and also when it will end.

Under Subdivision (d)

If the application is for power purposes, give the theoretical horsepower to be developed, and the vertical head under which the power is to be developed.

Under Subdivision (e)

If the application is for power, mining, or milling purposes, give a description of the location of the proposed works, by legal subdivisions, or tie by course and distance to a section corner, as required in answer to Question 4 above.

Under Subdivision (f)

When the water applied for is to be returned to the stream, give a description of the proposed point of return, as required in answer to Question 4 above.

Under Subdivision (g)

If the application is for stock-watering purposes, state the approximate number and character of animals proposed to be watered.

Under Description of Proposed Works

Under description of proposed works, state by what means the water is to be diverted from the stream, whether by dam, ditches, pipe lines, or other conduit. Give the size of such ditches, pipe lines, etc., and the proposed grade that each will have from the point of diversion, to enable this office to determine the capacity of each. The size of the ditch should be consistent with the amount of water applied for under Question No. 2.

If the water is to be stored in the reservoir, give its location with reference to the legal subdivision or subdivisions. If the reservoir is to be located on unsurveyed lands, the rules and regulations of the Department of the Interior should be followed precisely. Such rules and regulations are embodied in a pamphlet, furnished by the Department of the Interior, called "Regulations Concerning Right of Way Over Public Lands and Reservations for Canals, Ditches, and Reservoirs." The maps and field notes of such reservoir should conform

strictly with these regulations, and a copy filed with the office of the State Engineer.

Applications for permit to store water shall conform with the above rules, except that the description of the lands to be irrigated shall not be required. If, however, the description of the lands is known and can be listed, the number of acres and location should be given.

The application shall bear the signature of the applicant, his agent, or attorney.

FEES

The following fees shall be collected by the State Engineer in advance, and shall be accounted for and paid by him into the General Fund of the State Treasury, on or before the 10th day of each month. The fees named in subdivision (c) of this list shall not apply to permits for underground waters:

(a) For examining and filing an application for permit to appropriate water, fifteen dollars (\$15), which shall include the cost of publication, which publication fee is hereby fixed at ten dollars (\$10).

(b) For examining and filing an application for permit to change place of diversion, manner of use, or place of use, twenty-five dollars (\$25), which shall include the cost of permit should the same issue thereunder, and the cost of publication of such application.

(c) For issuing and recording permit to appropriate water for irrigation purposes, five cents per acre for each acre to be irrigated, up to and including one hundred acres, and three cents for each acre in excess of one hundred acres up to and including one thousand acres, and two cents for each acre in excess of one thousand acres.

(d) For issuing and recording permit for power purposes, twenty-five cents for each theoretical horsepower to be developed, up to and including one hundred horsepower, and fifteen cents for each horsepower in excess of one hundred horsepower, up to and including one thousand horsepower, and ten cents for each horsepower in excess of one thousand.

(e) For issuing and recording permit to store water, two cents for each acre-foot of water to be stored, up to and including one thousand acre-feet, and one cent for each acre-foot in excess of one thousand.

(f) For issuing and recording permit to appropriate water for any other purpose, \$5 for each second-foot of water applied for, or fraction thereof. The minimum fee for issuing and recording any permit is \$5.

(g) For filing secondary permit under reservoir permit, \$5; for approving and recording secondary permits under reservoir permits, \$5.

(h) For filing proof of commencement of work, \$1.

(i) For filing proof of completion of work under any permit, \$1.

(j) For filing any protest, affidavit, or any other water-right instrument or paper, \$1.

(k) For making copy of any document recorded or filed in his office, one dollar for the first hundred words and twenty cents for each additional one hundred words or fraction thereof; where the amount exceeds \$5, then only the actual cost in excess of that amount shall be charged.

(l) For certifying to copies of documents, records or maps, one dollar for each certificate.

(m) For blue-print copy of any drawing or map, ten cents per square foot.

(n) For such other work as may be required of his office, actual cost of the work.

PAYMENT OF FEES

No instrument will be accepted for filing in the State Engineer's office, unless the fee for recording the same, as above provided, shall accompany such instrument. In cases where no fee accompanies the instrument tendered for filing, such instrument shall be returned to the sender forthwith.

Where copies of any instrument of record in the office of the State Engineer are desired, a sufficient amount to cover the approximate cost of same should be forwarded with the application for such copies. When such copies are prepared, any surplus over and above the statutory cost for copying such instrument or instruments shall be returned to the party requesting such copies.

Remittances should be made by draft or postal or express money order payable to the order of the State Engineer, Carson City, Nevada. Where uncertified personal checks are sent, official receipt may be withheld pending collection. Foreign checks, in addition to certification, must include the exchange charge of the local bank.

APPLICATION TO CHANGE THE POINT OF DIVERSION, MANNER OR PLACE OF USE

It is difficult to prescribe any definite form for applications to change the point of diversion, place or manner of use, as each case depends upon its own peculiar conditions.

The following form, however, should be used whenever applicable, making changes to fit the conditions. The information called for therein shall be required in all cases:

APPLICATION FOR PERMISSION TO CHANGE THE POINT OF DIVERSION OF THE WATERS OF THE STATE OF NEVADA

(Insert place of use or manner of use, when for that purpose)

Date of first receipt and filing in State Engineer's Office.....
Returned to applicant for correction.....
Corrected application filed.....

The undersigned....., of....., County of.....
State of....., hereby makes application to change the.....
of waters heretofore appropriated and beneficially used as hereinafter shown.

1. The source of the water supply proposed to be changed is.....
2. The quantity of water desired to be changed is.....cubic feet per second.
3. The water is to be used for.....
4. The water is to be diverted from its source at the following point:.....

5. The existing point of diversion (manner of use) under the former appropriation is as follows:.....

6. The water, herewith desired to be changed, has been beneficially and continuously used upon the following-described lands:.....

7. Number of acres heretofore irrigated is.....
8. Number of acres proposed to be irrigated is.....
9. Description of the land proposed to be irrigated is as follows:.....
10. Description of proposed works.....
11. Estimated cost of proposed works is.....
12. Estimated time required to construct the works is.....
13. Irrigation will begin about.....of each year and end about.....
of each year.

14. The water has been used heretofore during the months of.....
.....each year.

15. Remarks:

Compared....., Applicant.

This sheet inspected..... By.....
....., Engineer.

Applications to change the point of diversion, place of use, or manner of use, shall be accompanied by maps conforming with the rules of the office, hereinbefore given. The State Engineer shall require a Proof of Appropriation in connection with all applications for changes in point of diversion, place or manner of use, when the existing right is claimed to have been acquired prior to the year 1905.

Before an application for the above changes will be acted upon, it must be clearly shown that a right exists, and the extent thereof, and that the change will not interfere with other rights.

Applications for such changes should be limited to the amount of water for which a right can be proven.

REGULATIONS CONCERNING MAPS TO ACCOMPANY AN APPLICATION TO APPROPRIATE WATER

(See regulations for maps under proofs of appropriation.)

Maps, conforming with the following regulations, will be required in connection with applications to appropriate water within six months after the approval of the applications.

(In isolated cases where the cost of the map is prohibitive, this requirement may, in the discretion of the State Engineer, be dispensed with. In all such cases, however, the applicant will be required to show by affidavit that the cost of the map is prohibitive or that it is not commensurate with the value of the water. A definite location of the point of diversion, etc., must be stated in the application in all cases.)

(a) These maps must be neatly and accurately drawn with India ink, to some convenient scale, preferably 600 feet to the inch, on sheets of tracing linen of uniform size, 24x32 inches, 2 inches on the left of each sheet being allowed for binding. If the scale must be reduced to such an extent that it does not show the details of the drawing, separate sheets of the same size should be used.

(b) The maps must show the location of the point of diversion by course and distance from some government corner. They must show the location of the headgate, also the traverse of the ditch or canal; and, where the government survey lines are crossed, ties to section corners must be shown. Where the appropriation is made to irrigate specific lands, the estimated acreage that can be cultivated should be placed on the map within each forty-acre subdivision. Where the lands are unsurveyed the outline should be shown by traverse, and tied by course and distance to the point of diversion, which in turn is tied to some government corner.

(c) The maps must show the location and name of the stream or water source from which the appropriation is to be made. The areas to be irrigated should be colored and notated.

(d) All crossings of other canals and ditches and streams should be noted. Different colored ink should be used to show these lines.

(e) Maps must show the name of the ditch, canal, or reservoir, and the affidavit of the engineer or surveyor must be lettered on the map.

(g) If water power is to be developed, the profile of the river or stream from the point of diversion to the point of use must be plotted on profile paper (the size of sheet to be 24x32 inches, the same as mentioned above for filing in connection therewith) to be transmitted with the maps first mentioned. If the data can be shown on one map, separate maps will not be required.

(i) Copies of the detail drawings of the dams, headworks, outlet, and wasteways must be filed with the State Engineer. A copy of the longitudinal and cross-section of dams must be submitted.

**AFFIDAVIT FOR MAPS MADE TO COVER REQUIREMENTS
OF LAW UNDER A NEW APPLICATION**

STATE OF NEVADA, } ss.
County of..... }

....., *Surveyor.*

Subscribed and sworn to before me this, the.....day of....., 19.....

Notary Public in and for.....*County, Nevada.*

In cases where an application is canceled without having been published, the fee deposited for such publication shall be returned to the applicant on the first monthly settlement with the State Treasurer thereafter.

Upon receipt of an application the State Engineer will make an examination of the records, after checking the application as to its form and information required, and if the records show that the water is all appropriated on the source named, the application will be returned to the applicant. If the records do not show the condition of the source applied for as to unappropriated water, the application will be filed, and appropriate action taken after due investigation.

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the application, as it will be presumed that there must be a question about the amount of unappropriated water by reason of the filing of the application.

Application returned without filing as above outlined shall be filed upon a second request by the applicant therefor, and accompanied by a statement that an examination and further determination be made of the case. Appropriate action on such application will then follow in routine.

Applications not conforming with the rules of the department will be returned for correction. Sixty days are allowed by statute to refile the application in corrected form. No extension of time can be granted, as the law does not provide for it.

PROTESTS AGAINST THE GRANTING OF AN APPLICATION SHALL CONTAIN THE FOLLOWING INFORMATION

All protests must be submitted in duplicate.

- (a) The name, postoffice address, and occupation of the protestant.
- (b) The number and date of filing the application.
- (c) The source of water supply named in the application.
- (d) The grounds for protesting. (The ground of protest should be fully set forth. The reasons should be numbered in separate paragraphs.)
- (e) The prayer for the proposed relief.
- (f) The protest must be in writing, signed and verified by the protestant.

Upon the receipt of a protest, filed in accordance with the statutes of the State of Nevada, the State Engineer shall immediately notify the applicant or applicants that such a protest has been filed, giving the name and residence of such protestant, which notice, together with a copy thereof, shall be mailed to the applicant, or his or their authorized agent.

The State Engineer will make an inspection of the proposed appropriation when necessary, and may, in his discretion, if the facts found upon such inspection warrant it, set a time and place for holding a hearing upon such protest. No hearing shall be had upon any such contest except after fifteen days' notice by registered mail to both the applicant and protestant, unless otherwise stipulated, which notice shall give the time and place at which said hearing is to be held.

At such hearing the parties interested may submit such proofs as they deem necessary in support of their respective claims, and may or may not be represented by counsel. The State Engineer reserves the right to make an independent investigation to determine the physical facts of the matter in controversy, and examine any party or any witness to the proceeding on his own motion.

At such hearing either party, or the State Engineer, may elect to have the testimony and proceedings taken in shorthand, but in such case the party or parties requesting that such testimony and proceedings be reported shall pay the expense of the taking and transcribing of such testimony. In the event that such hearing is reported, the rules and practice governing the hearings upon relative rights, as hereinbefore provided, shall govern.

FORM OF PROTEST

IN THE OFFICE OF THE STATE ENGINEER OF THE STATE OF NEVADA

Protest of.....
In the Matter of Application Number....., filed by..... on..... 19.....
to appropriate the Waters of.....

Comes now....., whose postoffice address is....., whose
occupation is....., and protests the granting of application
number....., filed on..... 19..... by..... to
appropriate the waters of....., situated in..... County, State
of Nevada, for the following reasons and on the following grounds, to wit:

WHEREFORE, Protestant prays that the application be.....
(Denied, or issued subject to prior rights, as the case may be)
and that the use of water herein claimed by protestant be confirmed and that
an order be entered establishing said right and for such other relief as the State
Engineer deems just and proper.

Protestant.

State of Nevada, County of.....^{SN.}
....., being first duly sworn, deposes and says, that he has read
the foregoing protest and knows the contents thereof, and that the same is true
of his own knowledge, except as to the matters which are therein stated on
information and belief, and as to those matters he believes it to be true.
Subscribed and sworn to before me this..... day of....., 19.....

Notary Public.

The State Engineer, before approving or rejecting an application,
may require such additional information as will, in his discretion,
enable him to properly guard the public interest, as provided by section
64, chapter 140, Laws of 1913, and in such instances an order will be
entered by the State Engineer naming the time in which to comply
therewith.

EXTENSIONS OF TIME

Applications for extension of time, for any purpose whatsoever, shall
only be considered upon an affidavit setting forth good and substantial
reasons why the extension should be granted. The State Engineer shall
use his discretion in determining what are good and substantial reasons
in ruling thereon. Such application for extension of time must be filed
prior to the date set in the permit for the performance of the act for
which an extension is requested.

All proofs required by the terms of a permit must be filed with the
State Engineer, on or before the date set in such permit for the filing
of the same, except where extensions have been granted for the filing
thereof by the State Engineer.

In cases where holders of permits fail to file the required proof or
proofs within the time set in the permit for such filing, the State Engi-
neer shall advise the holder of such permit that the permit is held for
cancelation, and the holder shall be given thirty days' additional time
to file such proof or proofs. In the event that the proof or proofs are
not filed within such thirty-day limit, the permit shall be canceled, and
no further proceedings had thereon.

As no provision for extensions of time was embodied in the laws of
1905, 1907, and 1909, all applications for extensions of time under per-
mits filed prior to March 22, 1913, must be submitted under the law of
1913, and thenceforth the provisions of the law of 1913 shall apply to
such permits.

TRANSFERS OF APPLICATIONS OR PERMITS

The transfer of an application or permit for water right shall not be recognized as binding except as between the parties until a certified copy of the transfer shall be filed with the office of the State Engineer.

The deed transferring the application or permit must show the state serial number and the water source.

All notices will be sent to the original applicant, his agent or attorney, unless a record of the transfer is on file.

The following form shall be used in filing Proof of Commencement of Work:

Under Permit No.

AFFIDAVIT OF LABOR AND IMPROVEMENTS

State of Nevada, County of ss.

Before me personally appeared, the subscribed, who being duly sworn saith that at least dollars (\$.....) has been expended in work or improvements performed or made under the conditions provided in Permit No., and at the expense of the applicant.

Said improvements consisted of and were made at

being work essential to the actual diversion of the water applied for. Said improvements were begun prior to, 191.....

Applicant.

Subscribed and sworn to before me this.....day of, 19.....

Notary Public in and for the County of, State of Nevada.
My commission expires

The following form shall be used for Proof of Application of Water to Beneficial Use:

Under Permit No.

PROOF OF APPLICATION OF WATER TO BENEFICIAL USE

DEPOSITION OF HOLDER

Question 1. What is your name, occupation, and postoffice address?

Answer

Question 2. Are you acting in behalf of a corporation? If so, state its name, place of business, and your authority for acting in its behalf.

Answer

Question 3. What is the number of the permit under which this proof is made?

Answer

Question 4. From what source do you obtain your water supply?

Answer

Question 5. What is the name of the canal, conduit or other works by which water is conducted to its place of use?

Answer

Question 6. Are you the person to whom the permit was issued? If not, state how you obtained it, giving the succession of title.

Answer

(If assignments of title are not on file in the office of the State Engineer the certificate will issue to the original applicant.)

Question 7. For what purpose are you using the water for which you are now making proof?

Answer

Question 8. If water is used for irrigation purposes, upon how many acres of land have you actually beneficially used water?

Answer

Question 9. Give the number of acres in each legal subdivision.

Answer.....acres in the.....of Sec..... T..... R..... E.
acres in the.....of Sec..... T..... R..... E.
acres in the.....of Sec..... T..... R..... E.
acres in the.....of Sec..... T..... R..... E.

(Enumerate only the land upon which water has been beneficially used.)

Question 10. How many cubic feet per second of water, or fraction thereof, have you actually diverted and beneficially used for the purpose for which this proof is made?

(Actual measurement of water shall be given. 40 miners' inches is equal to 1 cubic foot per second. 1 miner's inch equals 11.21 gallons per minute. 448.83 gallons per minute is equal to 1 cubic foot per second.)

Answer.....

Question 11. During how many days, weeks, or months in each year has such quantity of water been beneficially used for such purpose by you?

Answer.....

Question 12. Do you divert and use more water at periods than granted in the permit for which proof is made? If so, make proper explanation.

Answer.....

Question 13. Do you use the rotation system for irrigating?

Answer.....

Question 14. What is the maximum capacity of your works of diversion and conduit?

Answer.....

If water is used for power or any other purpose than irrigation, answer the following:

Question 15. What are the dimensions of the diversion headgate and carrying capacity in cubic feet per second?

Answer.....

Question 16. What are the dimensions of the cross-section of the pipe, flume, ditch, or other conduit at each change in cross-section, and the length of each portion of the same size?

Answer.....

Question 17. What is the average grade or difference in elevation between the terminl of the conduit? Give the grades of the different sections of conduit as shown above.

Answer.....

Question 18. What is the name and address of the person who made the measurements of water?

Answer.....

Question 19. On what dates were the water measurements taken and at what point?

Answer.....

Question 20. What is the character of the soil irrigated?

Answer.....

Question 21. State, if you know, the normal number of cubic feet per second flowing in the source at your point of diversion.

Answer.....

Remarks:.....

(Give all information relative to the method of use of water and any other matters you deem important.)

The accompanying map made a part hereof, made under my instructions and authority, shows the actual conditions on the premises.

Signed:.....

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, and I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me at my office in..... County of..... State of..... on this..... day of..... A. D. 19....

The maps required to accompany the above Proof of Application of Water to Beneficial Use shall conform with the requirements of maps to be filed with a Proof of Appropriation (see page 14) and shall, in addition, show the cross-sections of the conduit and the capacity and quantity of water flowing in the conduit, as provided by section 69, subdivision 13, chapter 140, Statutes of Nevada, 1913.

Tracings of the maps accompanying applications may be used to accompany the Proof of Application of Water to Beneficial Use by adding the necessary data relative to irrigated acreage, etc., thereon.

This will not entail a repetition of the work of surveying, the only surveying required for the final map being that necessary to obtain the outline of the irrigated land and water measurements.

RULES OF THE STATE ENGINEER IN RELATION TO APPLICATIONS FOR CAREY ACT WITHDRAWALS

Temporary Withdrawals

Upon advice from the State Register of Lands Under the Carey Act that a report is required on any project, in accordance with section 5 of the Act of March 17, 1911, the applicant will be required to deposit with the State Engineer sufficient funds to cover the costs of the examination and report.

The amount required will be estimated by the State Engineer, and the applicant duly notified. No action will be taken on the report in advance of the receipt of such funds.

Any funds deposited over the actual cost of the examination and report will be returned to the applicant.

Applications for Water for Carey Act Withdrawals

Applications for water, which are necessary to be filed at the time of filing the application for temporary withdrawal of the lands, must make provision to cover sufficient water to furnish the statutory quantity of 1 cubic foot per second for each 100 acres of land applied for. If less water than this is determined to be sufficient to properly irrigate the land, provisions to adjust it will be made at a later date.

Final Segregations

Section 6 of the law requires the applicant to make determinations of the amount of water supply and feasibility of the project within the period of the temporary withdrawal.

Section 7 provides that these determinations be submitted to the State Engineer for the purpose of enabling him to make a report on the feasibility and practicability of the project for the final segregation.

The funds to cover the costs of water measurements and surveys will be estimated by the State Engineer and placed in the report made on the application for temporary withdrawal. The estimated amount of money to cover the costs of water measurements and surveys must be deposited with the State Register of Lands Under the Carey Act.

It is very important that the surveys and determinations be complete. The water measurements should cover the entire period of temporary withdrawal.

The State Engineer will recommend a final segregation only when the unappropriated water supply is deemed sufficient to properly irrigate the lands applied for in the final list.

Return of Deposit Made to Cover Surveys

When necessary to return all or part of the deposit made by the applicant to guarantee the surveys and determinations, the State Engineer will authorize the refund upon a satisfactory showing that the surveys and determinations have been completed, or that the proportion for which the refund is asked has been completed.

The amount of refund allowed will be in the proportion that the amount of work completed bears to the whole.

A corroborated affidavit must be filed with the State Engineer showing the amount and cost of the work for which the refund is requested.

Copies of the stream measurements and blue-print copies of the prepared maps may be required as evidence of the completion of the work.

The State Engineer will require that the records of stream measurements be certified as to their correctness under the oath of the person making the gagings, when the gager is the employee of the applicant.

USEFUL EQUIVALENTS

The following equivalents of the terms, second-foot and acre-foot and miner's inch, will serve as a guide where necessary to transpose them:

1 acre-foot of water is the quantity that will cover an area of 1 acre 1 foot deep.

1 second-foot of water is the quantity that will fill a space of 1 cubic foot in 1 second of time.

1 second-foot equals 40 miners' inches.

1 second-foot equals 7.4805 gallons per second, or 448.83 gallons per minute.

1 acre-foot equals 43,560 cubic feet.

1 miner's inch equals 0.186+ gallons per second.

1 miner's inch equals 11.21 gallons per minute.

1 miner's inch equals 672.60 gallons per hour.

1 miner's inch equals 16,142.40 gallons per day of 24 hours.

1 miner's inch flowing 20.16 days will cover an acre of land 1 foot deep, or it will be the equivalent of 1 acre-foot.

1 miner's inch flowing 150 days (5 months of 30 days each) will cover an acre of land 7.4 feet deep.

1 second-foot of water flowing 150 days equals 297.06 acre-feet, or enough water to cover 100 acres of land 2.9706 feet deep.

1 second-foot of water flowing 24 hours equals 86,400 cubic feet, or 1.98 acre-feet, or approximately 1 acre 2 feet deep.

1 acre-foot equals 325,850 gallons.

MEASUREMENTS OF WATER

In everyday practice water measurements are accomplished by means of weirs, and the current meter. Other methods are used, such as the float, or measurement through an orifice; however, they are never used when it is possible to use a current meter or a weir.

Weirs should invariably be used where the flow of the ditch or stream is not so large that they are impracticable. This method affords the most accurate measurement, besides being what might be termed an automatic measuring device, which enables every water user to know at all times the quantity of water flowing in his ditch, by simply referring

to tables which give the discharge according to the length of the weir and the depth of water flowing over it.

On large streams it is not feasible to construct weirs, and measurements are taken by means of the current meter, an instrument for obtaining the velocity of the water. The cross-section of the stream, multiplied by the velocity obtained by the current meter, gives the discharge. The cross-section is usually taken in square feet, the velocity in feet per second, and the discharge given in cubic feet per second.

WEIRS

There are several forms of weirs which may be used for the measurement of water. The most common forms in use, however, are the rectangular weir and the trapezoidal or "Cippoletti weir."

The rectangular weir requires corrections for the different heights of water flowing over the crest, and for this reason the Cippoletti weir is recommended wherever it is necessary to accurately measure the discharge of any ditch or stream.

The Cippoletti weir receives its name from its inventor. The design of the weir is such that the sloping ends of the notch correct automatically the changes for the different heights of water flowing over it, as compared with the rectangular weir.

The Cippoletti weir has been adopted as the standard form by the office of the State Engineer, and a set of plans for a four-foot weir have been prepared for free distribution upon application.

The size of the weir required for any given discharge may be found by referring to the table of discharges. The proportions of the weir shown on the standard form should be maintained for the different sizes to insure correct measurements. In the construction of any weir the rules herewith given should be followed as closely as conditions will permit.

The location of weirs in a channel should be selected with care. The channel should be straight and of uniform cross-section for a distance of 50 to 100 feet leading to the weir. The center of the stream should meet the center of the weir and be perpendicular to it.

The water above the weir should be without current, or as nearly so as possible. This may be accomplished by widening the channel immediately above the weir, forming a pond or reservoir. By so enlarging the channel the velocity of approach is reduced to minimum.

The area of the channel should be from eight to ten times the area of the notch of the weir.

The upstream side of the weir plane should be sharp and rigid. Usually this is accomplished by beveling the crest and ends of the weir. A galvanized-iron sheet, cut to form and attached to the upper side of the notch by means of screws or bolts, makes an excellent crest.

The width of the weir crest should be three times the maximum depth of water that will pass over it. Thin sheets of water passing over weirs may cause inaccurate measurements. The distance from the end of the weir notch to the edge of the channel should be two times the depth of water passing over the crest. Dirt should not be allowed to accumulate against the upstream side of the structure. The canal bottom should be three times the depth of water passing over the crest below the top of the crest.

The overflow should have full contractions. By constructing the faces of the weir at right angles to the stream on both sides and bottom equal to two times the depth of water expected to pass over it, air will pass under the overflow sheet of water and produce the contractions. The water should have a clear fall to insure this perfect air-space.

The depth of water passing over the weir should be measured some distance up stream from the crest. A peg should be driven in the bed of the stream at such a distance above the weir that the curve formed by the water flowing over it will not affect the surface at the peg.

The zero mark of the peg should be exactly level with the top of the crest. Numerous devices may be used for gages to read the depth of water. Simple graduations in feet and decimals thereof may be placed on the peg and the depth read directly. Brass-headed tacks may be used as the markers for the different graduations.

Care should be exercised in reading the gage, as a slight error in reading produces a considerable error in the quantity of discharge. For accuracy the gage should be read to at least $\frac{1}{100}$ of a foot. In everyday practice the errors will usually be compensated, as on one occasion the reading may be too high and again it may be too low.

FORMULA FOR COMPUTING THE DISCHARGE OVER CIPPOLETTI'S TRAPEZOIDAL WEIRS

Q equals $3.3^{\frac{2}{3}} LH^{\frac{5}{2}}$.

Q equals the discharge in cubic feet per second.

L equals the length of the weir in feet.

H equals the depth of water passing over the crest measured to the quiet surface.

(See Schedule A for table of discharges for different lengths and depths of water.)

OTHER FORMS OF WEIRS

In order that measurements will not be confused it was thought advisable to omit tables for rectangular weirs, as well as plans, etc. In many ditches and streams it will be impracticable to install the Cippoletti weirs, but where rectangular weirs are already installed the table for Cippoletti weirs may be used for rough measurements.

Submerged weirs must of necessity be installed in many places where the conditions are not favorable for Cippoletti weirs with contractions. In such cases an engineer should be called upon to design the structure and make measurements until the ditch owner becomes familiar with the methods employed.



STATE OF NEVADA

NEVADA INDUSTRIAL INSURANCE ACT

Chapter 111, Statutes of 1913, as amended by Chapter 190,
Statutes of 1915, Chapter 233, Statutes of 1917,
and Chapter 176, Statutes of 1919

NOTE—The Act, as amended by Chapter 176,
Statutes of 1919, effective on and
after July 1, 1919

Compiled and Issued by the
NEVADA INDUSTRIAL COMMISSION



Address all correspondence without personal name to
Nevada Industrial Commission, Carson City, Nevada



CARSON CITY, NEVADA

STATE PRINTING OFFICE, : JOE FARNSWORTH, SUPERINTENDENT

1919

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TEXT OF THE LAW

Chapter 111, Statutes of 1913, as amended by Chapter 190, Statutes of 1915, Chapter 233, Statutes of 1917, and Chapter 176, Statutes of 1919.

CHAP. 111—An Act relating to the compensation of injured workmen in the industries of this state and the compensation to their dependents where such injuries result in death, creating an industrial insurance commission, providing for the creation and disbursement of funds for the compensation and care of workmen injured in the course of employment, and defining and regulating the liability of employers to their employees; and repealing all acts and parts of acts in conflict with this act.

The People of the State of Nevada, represented in Senate and Assembly, do enact as follows:

MODIFICATION OF REMEDIES

SECTION 1. (a) When, as in this act provided, an employer shall accept the terms of this act and be governed by its provisions, every such employer shall be conclusively presumed to have elected to provide, secure and pay compensation according to the terms, conditions, and provisions of this act for any and all personal injuries by accident sustained by an employee arising out of and in the course of the employment; and in such cases the employer shall be relieved from other liability for recovery of damages or other compensation for such personal injury, unless by the terms of this act otherwise provided.

Employer
accepting act
relieved of
further
liability

(b) Where a state, county, municipal corporation, school district, cities under special charter and commission form of government, is the employer, the terms, conditions and provisions of this act, for the payment of premiums to the state insurance fund for the payment of compensation and amount thereof for such injury sustained by an employee of such employer, shall be conclusive, compulsory, and obligatory upon both employer and employee.

Compulsory
on state,
cities, school
districts, etc.

(c) If an employer having the right under the provisions of this act to accept the terms, conditions and provisions thereof, shall fail to accept the same as herein provided, every such employer shall be deemed to have rejected the terms, conditions, and provisions thereof, and in such case such employer shall not escape liability for personal injury by accident sustained by an employee of such employer when the injury sustained arises out of and in the usual course of the employment, because:

Employers
rejecting law
shall not
escape legal
liability
because—

(1) The employee assumed the risks inherent or incidental to, or arising out of, his or her employment; or the risks arising from the failure of the employer to provide and maintain a reasonably safe place to work, or the risks arising from the failure of the employer to furnish reasonably safe tools or appliances, or because the employer exercised reason-

Employee
assumes
incidental
risks

able care in selecting reasonably competent employees in the business;

Negligence
coemployee

(2) That the injury was caused by the negligence of a coemployee;

Employee
self-
negligent

(3) That the employee was negligent, unless and except it shall appear that such negligence was wilful and with intent to cause the injury, or the result of intoxication on the part of the injured party;

Negligence
of employer
presumed,
when

(4) In actions by an employee against an employer for personal injuries sustained, arising out of and in the course of the employment where the employer has rejected the provisions of this act, it shall be presumed that the injury to the employee was the first result, and growing out of the negligence of the employer; and that such negligence was the proximate cause of the injury; and in such case the burden of proof shall rest upon the employer to rebut the presumption of negligence.

Employer
presumed
to have
rejected,
unless—

(d) Every such employer shall be conclusively presumed not to have elected to provide, secure, and pay compensation to employees for injuries sustained arising out of and in the course of the employment according to the provisions of this act, unless and until notice in writing of an election to accept shall have been given to the Nevada industrial commission, substantially in the following form:

EMPLOYER'S NOTICE TO ACCEPT

Employer's
notice to
accept

To the Nevada Industrial Commission:

You are hereby notified that the undersigned accepts the provisions of the "Nevada Industrial Insurance Act."

Signed.....

Implied
agreement
construed,
when

(e) Where the employer has given notice of an election to accept the terms of this act, and the employee has not given notice of an election to reject the terms of this act, every contract to hire, express or implied, shall be construed as an implied agreement between them, and a part of the contract on the part of the employer to provide, secure and pay, and on the part of the employee to accept, compensation in the manner as by this act provided for all personal injuries sustained arising out of and in the course of employment.

Accepting
employer to
be governed
by terms of
act

(f) Every such employer electing to be governed by the provisions of this act, before becoming entitled to the benefits of the act in the providing, securing, and paying of compensation to the employees thereunder, shall on or before the first day of July, 1917, and thereafter during the period of his election to be governed by the provisions of the act, pay to the Nevada industrial commission all premiums in the manner hereinafter provided; and during the period of his election to be governed by the provisions of the act shall comply with all conditions and provisions of the act, hereinafter stated.

Failure
to pay
premiums
constitutes
rejection

(g) Failure on the part of any such employer to pay the premiums as by the provisions of this act required shall operate as a rejection to the terms of the act. In the event

of any rejection of this act or the terms hereof, such rejecting employer shall post a notice of rejection of the terms of the act upon his premises in a conspicuous place. Failure to post said notice shall constitute a misdemeanor.

(h) It shall be the duty of such employer at all times to maintain the notice or notices so provided for the information of his employees, and any person failing so to maintain the same shall be guilty of a misdemeanor. *As amended, Stats. 1915, c. 190, and Stats. 1917, c. 233.*

Notice
rejection
required

Penalty

SEC. 2. No compensation under this act shall be allowed for an injury caused:

(a) By the employee's wilful intention to injure himself or to wilfully injure another; nor shall compensation be paid to an injured employee if injury is sustained while intoxicated.

Compensa-
tion not
paid, when

SEC. 2½. It shall be unlawful for any employer who has elected to reject the terms, conditions and provisions of this act, to make any charge against any employee, or to deduct from the wages of any employee any sum of money to meet the costs, in whole or in part, of the liability incurred by the employer by reason of his rejection of the Nevada industrial insurance act. Any such employer who makes a deduction for such purpose from the salary or wage of any employee shall be guilty of a misdemeanor, and shall, upon conviction, be fined not less than one hundred (\$100) dollars nor more than five hundred (\$500) dollars for each offense. It is hereby made the duty of the district attorney of the county where a violation of this provision is charged to prosecute such cases upon complaint of the commission, or upon complaint of any employee who submits proper evidence of a violation of this provision. *Added, Stats. 1917, c. 233.*

Charge
against
employee for
liability
unlawful

SEC. 3. (a) The rights and remedies provided in this act for an employee on account of an injury shall be exclusive of all other rights and remedies of such employee, his personal or legal representatives, dependents or next of kin, at common law or otherwise on account of such injury; all employees affected by this act shall be conclusively presumed to have elected to take compensation in accordance with the terms, conditions, and provisions of this act until notice in writing shall have been served upon his employer, and also on the Nevada industrial commission, with return thereon by affidavit showing the date upon which notice was served upon the employer.

Remedy
exclusive
upon
employee

(b) In the event that such employee elects to reject the terms, conditions, and provisions of this act, the rights and remedies thereof shall not apply where an employee brings an action or takes proceedings to recover damages or compensation for injuries received growing out of and in the course of his employment, except as otherwise provided by this act; and in such actions where the employee has rejected the terms of this act the employer shall have the right to plead and rely upon any and all defenses, including those at common law, and the rules and defenses of contributory negligence, assumption of risk and fellow servant shall apply and

Effect of
rejection by
employee

be available to the employer unless otherwise provided in this act; *provided, however*, that if an employee sustains an injury as the result of the employer's failure to furnish or fails to exercise reasonable care to keep or maintain any safety device required by statute or rule, or violate any of the statutory provisions or rules and regulations now or hereafter in force relating to safety of employees, the doctrine of assumed risk in such case growing out of the negligence of the employer shall not apply or be available as defensive matter to such offending party. The notice required to be given by an employee shall be substantially in the following form:

EMPLOYEES' NOTICE TO REJECT TERMS OF THIS ACT

To....(Name of employer)....and the Nevada Industrial Commission:

Employee's
notice to
reject terms
of act

You and each of you are hereby notified that the undersigned elects to reject the terms, conditions, and provisions of an act for the payment of compensation as provided by the industrial insurance act of the State of Nevada and acts amendatory thereto, and elects to rely upon the common law as modified by section 3 of the said act for the right to recover for personal injury which I may receive, if any, growing out of and arising from the employment while in line of duty for my employer above named.

Signed.....

Dated this.....day of....., 19.....

State of Nevada, County of....., ss.

The undersigned being first duly sworn deposes and says that the written notice was on the.....day of....., 19....., served on the within-named employer of the undersigned by delivering to.....(name of person served).....a true, correct, and verbatim copy thereof.

Subscribed and sworn (or affirmed) to before me by the said.....this.....day of....., 19.....

....., Notary Public.

Acceptance
or rejection
may be
changed

SEC. 4. (a) When the employer has accepted the terms of this act, or the employee has rejected the terms thereof in compliance with the provisions of this act, such election shall continue and be in force until such employer shall thereafter reject the provisions of this act, or said employee accept the provisions of this act, respectively, as provided in subsection (b) of this section.

(b) When an employer accepts, or an employee rejects, the provisions of this act, such party may at any time thereafter elect to waive such acceptance or rejection by giving notice in writing in the same manner required by the employer in accepting, or by the employee in rejecting, the provisions of this act, and which shall become effective when filed with the Nevada industrial commission. *As amended, Stats. 1915, c. 190, and Stats. 1917, c. 233.*

Liability not
modified,
when

SEC. 5. Where the employer and employee elect to reject the terms, conditions, and provisions of this act, the liability of the employer shall be the same as though the employee had not rejected the terms, conditions, and provisions thereof.

SEC. 6. An employer having come under this act, who thereafter elects to reject the terms, conditions, and provisions thereof, shall not be relieved from the payment of premiums to Nevada industrial commission prior to the time his notice of rejection becomes effective; and said premiums may be recovered in an action at law as hereinafter in this act provided.

Employer cannot evade payment of premiums

SEC. 7. When an employee coming under the provisions of the act receives an injury for which compensation is payable under this act and which injury was caused under circumstances creating a legal liability in some person other than the employer, to pay damages in respect thereof:

Liability in person other than employer

(a) The employee or beneficiary may take proceedings against that person to recover damages, but the amount of the compensation to which he is entitled under this act shall be reduced by the amount of the damages recovered;

(b) If the employee or beneficiary in such case receives compensation under this act, the Nevada industrial commission by whom the compensation was paid, shall be entitled to indemnity from the person so liable to pay damages as aforesaid, and shall be subrogated to the rights of the employee to recover therefor. *As amended, Stats. 1919, c. 176.*

EMPLOYER AND EMPLOYEE DEFINED

SEC. 7½. (a) The term "employer" as used in this act shall be construed to mean: The state, and each county, city and county, city, school district and all public corporations and quasi-public corporations therein, and every person, firm, voluntary association, and private corporation, including any public-service corporation, which has any person in service under any appointment or contract of hire, or apprenticeship, expressed or implied, oral or written, and the legal representative of any deceased employer.

"Employer" defined

(b) The term "employee" as used in this act shall be construed to mean: Every person in the service of an employer as defined in subdivision (a) of this section under any appointment or contract of hire or apprenticeship, expressed or implied, oral or written, including aliens, and also including minors, whether lawfully or unlawfully employed, and all elected and appointed paid public officers, and all officers and members of boards of directors of quasi-public or private corporations while rendering actual service for such corporation for pay, and a working member of a partnership receiving wages irrespective of profits from such partnership, but excluding any person whose employment is both casual and not in the course of the trade, business, profession or occupation of his employer; *provided*, that the term "casual" as used herein shall be taken to refer only to employments where the work contemplated is to be completed in not exceeding ten working days, without regard to the number of men employed and where the total labor cost of such work is less than one hundred dollars.

"Employee" defined

(c) Workmen associating themselves under a partner-

Certain
contractors
to be deemed
employees

ship agreement, the principal purpose of which is the performance of the labor on a particular piece of work, shall be deemed employees of the person having such work executed, and, in the event that the average monthly wages are not otherwise ascertainable, shall be deemed to be employed at the average monthly wages of workmen engaged in like work in the same locality.

"Leasers"
to be deemed
employees

(d) Workmen, commonly called "leasers," engaged individually or in association with other workmen in performing manual labor upon the mining property of another in the expectation of finding, developing, or extracting ore or mineral of value under an agreement, oral or written, to share in whole or in part the value of the ore or minerals found, developed or extracted with the lessor, shall be deemed employees of such lessor, and for the purposes of this act shall be deemed to be employed at the average wage paid to regularly employed miners in the locality. *Added, Stats. 1919, c. 176.*

NEVADA INDUSTRIAL COMMISSION

Nevada
Industrial
Commission
created

SEC. 8. (a) The administration of this act on and after April 1, 1915, is hereby imposed upon a commission to be known as the "Nevada Industrial Commission"; and said commission, to consist of three commissioners, is hereby created. The governor, attorney-general, and inspector of mines, shall constitute an industrial commission board for the appointment of such commissioners. Vacancies shall be filled in the same manner for unexpired terms. No more than two of the commission shall be members of the same political party at the date of any appointment. Each commissioner shall hold office for the term of four years from and after date of his appointment, and until his successor shall be appointed and shall have qualified. One commissioner shall be designated by the governor to be, and upon being so designated shall be, chairman of the commission. A decision on any question arising under the act concurred in by two of the commissioners shall be the decision of the commission.

Vacancies

Term, 4
years

Chairman

Removals,
how made

(b) The industrial commission board may remove any commissioner for inefficiency, neglect of duty, or misconduct in office, giving him a copy of the charges against him and an opportunity of being publicly heard in person or by counsel in his own defense, upon not less than ten days' notice. If such commissioner shall be removed, the industrial commission board shall file in the office of the secretary of state a complete statement of all charges made against such commissioner, and the findings thereon, together with a complete record of the proceedings.

Compensa-
tion,
members

(c) Each commissioner shall receive as compensation for his services the sum of ten dollars per day for all days in which he is actually engaged in the business of the commission which in no case shall exceed one hundred and fifty (\$150) dollars per month. The chairman shall also serve as

executive officer of the commission, in charge of the office and affairs of the commission, and shall be entitled to additional compensation for such service, which shall be fixed by the industrial commission board and approved by the governor. The executive officer of the commission shall not be financially interested in any business interfering or inconsistent with his duties. A member of the commission, or an employee of the commission, shall not serve on any committee of any political party. *As amended, Stats. 1915, c. 190.*

Executive
officer

SEC. 9. The commission shall be in continuous session and open for the transaction of business during all the business hours of each and every day excepting Sundays and legal holidays. All sessions shall be open to the public, and shall stand and be adjourned without further notice thereof on its records. All proceedings of the commission shall be shown on its record of proceedings, which shall be a public record and shall contain a record of each case considered, and the award made with respect thereto and all voting shall be had by the calling of each member's name by the secretary and each vote shall be considered as cast.

Sessions
commission
continuous
and open to
public

SEC. 10. The commission shall keep and maintain its office at the capitol, in the town of Carson City, Nevada, and shall be provided by the board of capitol commissioners with suitable rooms. Except in cases of emergency, all necessary printing, including forms, blanks, envelopes, letterheads, circulars, pamphlets, bulletins, and reports required to be printed by said commission shall be done at the state printing office and it is made the duty of the state printer to have such printing done as expeditiously as possible. *As amended, Stats. 1915, c. 190.*

Office in
Carson City

Printing

SEC. 11. The commission may employ a secretary, actuary, accountants, inspectors, examiners, experts, clerks, stenographers and other assistants, and fix their compensation. Such employments and compensation shall be first approved by the governor, and shall be paid out of the state treasury. The members of the commission, actuaries, accountants, inspectors, examiners, experts, clerks, stenographers, and other assistants that may be employed shall be entitled to receive from the state treasury their actual and necessary expenses while traveling in the business of the commission. Such expenses shall be itemized and sworn to by the person who incurred the expense and allowed by the commission.

Employees
of
commission

GENERAL ADMINISTRATIVE PROVISIONS

SEC. 12. The commission shall adopt reasonable and proper rules to govern its procedure, regulate and provide for the kind and character of notices, and the services thereof, in cases of accidents and injury to employees, the nature and extent of the proofs and evidence, and the method of taking and furnishing the same, to establish the rights to benefits of compensation from the state insurance fund, hereinafter provided for, the forms of application of those claiming to be entitled to benefits or compensation therefrom, the method

Commission
to adopt
rules

of making investigations, physical examinations and inspections, and prescribe the time within which adjudications and awards shall be made.

Employers
must furnish
information

SEC. 13. Every employer shall furnish the commission, upon request, all information required by it to carry out the purposes of this act. The commission or any member thereof or any person employed by the commission for that purpose, shall have the right to examine under oath any employer or officer, agent, or employee thereof.

Employers
must fill
blanks

SEC. 14. Every employer receiving from the commission any blank with directions to fill the same, shall cause the same to be properly filled out as to answer fully and correctly all questions therein propounded, and if unable to do so shall give good and sufficient reasons for such failure. Answers to such questions shall be verified under oath and returned to the board within the period fixed by the commission for such return.

NOTE—The Commission earnestly desires that the provisions of this and the preceding section will be strictly observed by employers, as such observance will result in the mutual benefit of employers and employees, and will be of great assistance to the Commission in carrying out the work prescribed.

Power to
administer
oaths

SEC. 15. Each member of the commission, the secretary and every inspector or examiner appointed by the commission shall, for the purposes contemplated by this act, have power to administer oaths, certify to official acts, take depositions, issue subpoenas, compel the attendance of witnesses and the production of books, accounts, papers, records, documents and testimony.

Disobedience
of commis-
sion's orders
punished as
contempt

SEC. 16. In case of disobedience of any person to comply with the order of the commission, or subpoena issued by it or one of its inspectors, or examiners, or on the refusal of a witness to testify to any matter regarding which he may be lawfully interrogated, or refuse to permit an inspection as aforesaid, the district judge of the county in which the person resides, on application of any member of the commission, or any inspector or examiner appointed by it, shall compel obedience by attachment proceedings as for contempt, as in the case of disobedience of the requirements of subpoenas issued from such court on a refusal to testify therein.

Fees for
serving
subpoenas

SEC. 17. Each officer who serves such subpoena shall receive the same fees as a sheriff, and each witness who appears, in obedience to a subpoena, before the commission or an inspector or examiner, shall receive for his attendance the fees and mileage provided for witnesses in civil cases in courts of record, which shall be audited and paid from the state treasury in the same manner as other expenses are audited and paid, upon the presentation of proper vouchers approved by any two members of the commission. No witness subpoenaed at the instance of a party other than the commission or any inspector shall be entitled to compensation from the state treasury unless the commission shall certify that his testimony was material to the matter investigated.

SEC. 18. In an investigation, the commission may cause

deposition of witnesses residing within or without the state to be taken in the manner prescribed by the law for like depositions in civil actions in the courts of record.

Deposition
of witnesses

SEC. 19. A transcribed copy of the evidence and proceedings, or any specific part thereof, or any investigation, by a stenographer appointed by the commission, being certified by such stenographer to be a true and correct transcript of the testimony on the investigation, or of a particular witness, or of a specific part thereof, carefully compared by him with his original notes and to be a correct statement of the evidence and proceedings had on such investigation so purporting to be taken and subscribed, may be received in evidence by the commission with the same effect as if such stenographer were present and testified to the facts so certified. A copy of such transcript shall be furnished on demand to any party upon the payment of the fee therefor, as provided for transcript in courts of record.

Transcript
received in
evidence

SEC. 20. The commission shall prepare and furnish blank forms, and provide in its rules for their distribution so that the same may be readily available, of application for benefits or compensation from the state insurance fund, notices to employers, proofs of injury or death, of medical attendance, of employment and wage earnings, and such other blanks as may be deemed proper and advisable, and it shall be the duty of insured employers to constantly keep on hand sufficient supply of such blanks.

Commission
to furnish
blank forms

STATE INSURANCE FUND PREMIUMS

SEC. 21. (a) Every employer electing to be governed by the provisions of this act with the exception of the state, counties, municipal corporations, cities, and school districts, shall, on or before the first day of July, A. D. 1919, and thereafter, as required by the Nevada industrial commission, pay to the Nevada industrial commission for a state insurance fund premiums in such a percentage of his estimated total pay-roll for the ensuing month as shall be fixed by order of the Nevada industrial commission; *provided, however*, that all premium rates now in effect shall be continued in full force and effect until changed, altered or amended by order of the Nevada industrial commission.

Advance
payment of
premiums
required
monthly

Every employer electing to be governed by the provisions of this act, who shall enter into business or resume operations subsequent to July 1, 1919, shall, before so commencing or resuming operations, as the case may be, notify the commission of such fact, accompanying such notification with an estimate of his monthly pay-roll, and shall make payment of the premium on such pay-roll for the first three months of operations, and thereafter as required by order of the Nevada industrial commission.

The Nevada industrial commission may require all premiums required by this act to be paid for three months in advance upon the estimated pay-roll of the employer, unless the commission be satisfied of the financial responsibility of

May require
payment of
premiums
in advance
for 3 months

the employer, or unless a good and sufficient surety bond for the payment of premiums be given by the employer to the Nevada industrial commission.

Pay-roll
reports
required
monthly

Every employer electing to be governed by the provisions of the act shall, on or before the twenty-fifth day of each month, furnish the Nevada industrial commission with a true and accurate pay-roll showing the aggregate number of shifts worked during the preceding month, the total amount paid to employees for services performed during said month, and a segregation of employment in accordance with the requirements of the commission. An adjustment of accounts shall then be made upon the basis of the actual pay-roll, and should the amount of the actual premium due exceed the estimated premium for the period, the amount of the deficiency shall be forwarded to the commission within thirty days after receipt by the employer of demand therefor.

Duty of state
and county
auditors and
clerk of
municipal-
ties and
school
districts

As soon as possible after the expiration of each quarter-year, beginning with September 30, 1919, it shall be the duty of the state auditor, and the auditor of each county, and the clerk of each municipal corporation, city, and school district, to furnish the Nevada industrial commission with a true and accurate pay-roll of said state, county, municipal corporation, city or school district, showing the aggregate number of shifts worked during the preceding quarter, the total amount paid to employees for services performed during said month, and a segregation of employment in accordance with the requirements of the commission; and it shall be the duty of each of the said auditors and clerks to make up and submit to the respective governing boards of the state and each county, municipal corporation, city, and school district, for approval a claim for the amount of premiums due the commission. Any official who fails or refuses to comply with the provisions of this section shall be guilty of a misdemeanor for each and every offense, and, upon conviction thereof, shall be punished by a fine of not less than fifty (\$50) dollars nor more than two hundred (\$200) dollars.

Penalties

Every employer who shall fail on demand of the commission to furnish an estimated pay-roll and make payment as above provided, shall be liable to a penalty in three times the amount of the premium on such pay-roll, to be collected in a civil action in the name of the Nevada industrial commission and paid into the state insurance fund.

Sixty days
notice of
change of
rates

(b) The Nevada industrial commission shall have the power, as experience and conditions demand, to increase or decrease the rates above provided; sixty days' notice of any change in rates shall be given before the same shall become effective; the commission shall have the power, and it shall be its duty, to classify occupations with respect to their degree of hazard, and determine the risks of the different classes and fix the rates of premiums of the same, based upon the total pay-roll and number of employees in each of said classes of occupation and sufficiently large to provide an adequate fund for the compensation provided for in this act,

and to create a surplus sufficiently large to guarantee a satisfactory state insurance fund from year to year.

(c) In that the intent is that the state insurance fund and the accident benefit fund shall ultimately be neither more nor less than self-supporting, the actual loss experience of the several classes of those funds shall be ascertained as soon as practical after the first day of July, 1919, for the first five years operation of the fund, and annually thereafter within six months after the close of each fiscal year, and should it then be shown that there exists an excess of assets over liabilities, such liabilities to include the necessary reserves and the sum of \$100,000 for the catastrophe hazard, then the commission shall either allow a credit to the account of or declare a cash dividend to each individual member of any class which is shown to have made contributions in excess of liabilities properly chargeable to such class, the amount of the credit so allowed or cash dividend declared to be proportionate to the amount of money said individual member of such class has paid or contributed to said fund. *As amended, Stats. 1915, c. 190, and Stats. 1919, c. 176.*

Distribution
of excess
assets

SEC. 22. (a) Whenever an establishment or work is dangerous in comparison with other like establishments or works, the Nevada industrial commission may advance its classification of risk and premium rates in proportion to the hazard. Such advancement of classification of risks and premium rates may be made without previous notice.

Higher rate,
when

(b) The Nevada industrial commission shall have the power in its discretion to lower the premium rate of or declare a rebate to any establishment or plant which has contributed to the state insurance fund for one year or more, if and as experience shall show it to maintain such a high standard of safety or accident prevention as to differentiate it from other like establishments or plants; *provided*, that such reduction of premium rate or rebate of premium contribution shall not exceed ten per cent (10%) where the accident experience of such establishment or plant for a period of twelve months is less than sixty per cent (60%) of the average experience for the same period of like establishments or plants of its classification, nor fifteen per cent (15%) where the accident experience of such establishment or plant for two consecutive periods of twelve months is less than sixty per cent (60%) of the average experience for the same period of like establishments or plants of its classification. *As amended, Stats. 1915, c. 190, and Stats. 1919, c. 176.*

Merit rating,
when

MEDICAL TREATMENT

SEC. 23. (a) Every injured employee within the provisions of this act shall be entitled to receive, and shall receive promptly, such medical, surgical and hospital or other treatment, nursing, medicines, medical and surgical supplies, crutches and apparatus, including artificial members, as may be reasonably required at the time of the injury and within ninety days thereafter, which may be extended

Injured
employee
to receive
prompt
medical
treatment

to one year by the Nevada industrial commission. The benefits conferred by this paragraph upon the injured employee shall hereinafter be termed "Accident Benefits."

Fund for
"Accident
Benefits"

(b) For the purpose of providing a fund to take care of said accident benefits as in this act provided the Nevada industrial commission is authorized and directed to collect a premium upon the total pay-roll of every employer, except as hereinafter provided, in such a percentage as the commission shall by order fix; every employer paying such premium shall be relieved from furnishing accident benefits, and the same shall be provided by the Nevada industrial commission. Every employer paying such premium for accident benefits may collect one-half thereof, not to exceed one dollar per month from each employee, and may deduct the same from the wages of such employee.

Commission
may adopt
rules and
regulations

The Nevada industrial commission shall have the authority to adopt such reasonable rules and regulations as may be necessary to carry out the provisions of this subdivision of this section. All fees and charges for such accident benefits shall be subject to regulation by the commission, and shall be limited to such charges as prevail in the same community for similar treatment of injured persons of like standard of living.

State
insurance
fund not
liable for
accident
benefits

The state insurance fund provided for in this act shall not be liable for any accident benefits provided by this section, but the fund provided for accident benefits shall be a separate and distinct fund, and shall be so kept.

Duty of
employer
to injured
employee

(c) It shall be the duty of every employer accepting the provisions of this act, immediately upon the occurrence of any injury to any of his employees, to render to such employee all necessary first aid, including cost of transportation of the injured employee from the place of injury to the nearest place of proper treatment where the injury is such as to make it reasonably necessary for such transportation; such employer shall forthwith notify the commission of such accident, giving the name of the injured employee, the nature of the accident and where and by whom the injured employee is being treated, and the date of the accident. Every employer paying accident benefit premiums to the Nevada industrial commission furnishing such first aid shall be entitled to receive from the commission the amount of such expenditure reasonably made.

Accident
benefits pro-
vided by
employer

(d) Every employer operating under this act alone or together with other employers may make arrangements for the purpose of providing accident benefits as defined in this act for injured employees and such employer may collect one-half of the cost of such accident benefits from their collective employees, not to exceed one dollar per month from any one employee, and may deduct the same from the wages of each employee. Employers electing to make such arrangements for providing accident benefits shall notify the Nevada industrial commission of such election and render a detailed

statement of the arrangements made. Every employer who maintains a hospital of any kind for his employees, or who contracts with a physician for the hospital care of injured employees, shall, on or before the thirtieth day of January of each year, make a written report to the Nevada industrial commission for the preceding year, which report shall contain a statement showing: (1) Total amount of hospital fees collected, showing separately the amount contributed by the employees and the amount contributed by the employers; (2) an itemized account of the expenditures, investments, or other disposition of such fees, and (3) a statement showing what balance, if any, remains. Such reports shall be verified by the employer, if an individual; by a member, if a partnership; by the secretary, president, general manager or other executive officer, if a corporation; by the physician, if contracted to a physician.

Employer
required to
report

Every employer who fails to so notify said Nevada industrial commission of such election and arrangements, or who fails to render the financial report required herein, shall be liable for accident benefits as heretofore provided by subdivision (b) of this section.

(e) If it be shown or the commission finds that the employer is furnishing the requirements of medical, surgical, or hospital aid or treatment provided for in this act in such a manner that there are reasonable grounds for believing that the health, life, or recovery of the employee is being endangered or impaired thereby, the commission may, upon application of the employee or upon its own motion, order a change in the physician or other requirements, and if the employer fails to promptly comply with such order, the injured employee may elect to have such medical, surgical, or hospital aid or treatment provided by or through the Nevada industrial commission, in which event the cause of action of said injured employee against the employer or hospital association shall be assigned to the Nevada industrial commission for the benefit of the state insurance fund, and the Nevada industrial commission shall furnish to said injured employee the medical, surgical, or hospital aid or treatment provided for in this act. *As amended, Stats. 1915, c. 190, Stats. 1917, c. 233, and Stats. 1919, c. 176.*

Commission
may inter-
fere, when

SEC. 24. All premiums provided for in this act shall be paid to the state treasurer, and shall constitute the state insurance fund for the benefit of employees of employers and for the benefit of dependents of such employees, and shall be disbursed as hereinafter provided.

Premiums
paid to state
treasurer

COMPENSATION PROVISIONS

SEC. 25. Every employee in the employ of an employer within the provisions of this act, who shall be injured by accident arising out of and in the course of employment, or his dependents, as hereinafter defined, shall be entitled to receive the following compensation:

(A) DEATH BENEFITS

Death benefits If the injury causes death, the compensation shall be known as a death benefit, and shall be payable in the amount and to and for the benefit of the persons following:

Burial 1. Burial expenses, not to exceed one hundred and twenty-five (\$125) dollars, in addition to the compensation payable under this act.

To widow 2. To the widow, if there is no child, thirty per centum of the average wage of the deceased. This compensation shall be paid until her death or remarriage, with two years' compensation in one sum upon remarriage.

To widower 3. To the widower, if there is no child, thirty per centum of the average wage of the deceased, if wholly dependent for support upon the deceased employee at the time of her death. This compensation shall be paid until his death or remarriage.

To widow or widower and children 4. To the widow or widower, if there is a child or children, the compensation payable under clause one (1) or clause two (2), and in addition the additional amount of ten per centum of such wage for each such child until the age of eighteen years. In case of the subsequent death of such surviving wife (or dependent husband) any surviving child of the deceased employee shall have his compensation increased to fifteen (15) per centum of such wages, and the same shall be payable until he shall reach the age of eighteen years; *provided*, that the total amount payable shall in no case exceed sixty-six and two-thirds per cent of such wage. If the children have a guardian other than the surviving widow or widower, the compensation on account of such children may be paid to such guardian. The compensation payable on account of any child shall cease when he dies, marries, or reaches the age of eighteen years, or if over eighteen years, and incapable of self-support, becomes capable of self-support.

To children only 5. If there be a surviving child or children of the deceased under the age of eighteen years, but no surviving wife (or dependent husband) then for the support of each child until the age of eighteen years, fifteen per centum of the wages of the deceased; *provided*, that the aggregate shall in no case exceed sixty-six and two-thirds per centum of such wages.

To parents 6. If there be no surviving wife (or dependent husband) or child under the age of eighteen years, there shall be paid to a parent, if wholly dependent for support upon the deceased employee at the time of his death, twenty-five per centum of the average monthly wage of the deceased during dependency, with an added allowance of ten per centum if two dependent parents survive; to the brothers or sisters, under the age of eighteen years, if one is wholly dependent upon the deceased employee for support at the time of injury causing death, twenty per centum of the average monthly wage for the support of such brother or sister, until of the age of eighteen years. If more than one brother or sister is wholly dependent, thirty per centum of the average monthly

wage at the time of injury causing death, divided among such dependents share and share alike. If there is no one of them wholly dependent, but one or more partly dependent, ten per centum divided among such dependents share and share alike.

7. In all other cases, questions of total or partial dependency shall be determined in accordance with the facts as the facts may be at the time of the injury. If the deceased employee leaves dependents only partially dependent upon his earnings for support at the time of the injury causing his death, the monthly compensation to be paid shall be equal to the same proportion of the monthly payments for the benefit of persons totally dependent as the amount contributed by the employee to such partial dependents bears to the average wage of deceased at the time of the injury resulting in his death. The duration of such compensation to partial dependents shall be fixed by the commission in accordance with the facts shown, but in no case exceed compensation for one hundred months.

To partial dependents

8. Compensation to the widow or widower shall be for the use and benefit of such widow or widower and of the dependent children, and the commission may, from time to time, apportion such compensation between them in such way as it deems best for the interests of all beneficiaries.

If a dependent to whom a death benefit is to be paid is an alien not residing in the United States, the compensation shall be only sixty (60) per cent of the amount or amounts above specified.

To aliens.
60% of above

9. Any excess of wages over one hundred and twenty (\$120) dollars a month shall not be taken into account in computing compensation for death benefits.

Maximum wage for computing

10. In such cases where compensation is awarded to the widow, dependent children, or persons wholly dependent, no lump-sum settlements shall be allowed.

No lump-sum settlements for total dependents

11. In case of the death of any dependent specified in the foregoing enumeration before the expiration of the time named in the award, funeral expenses not to exceed one hundred and twenty-five (\$125) dollars shall be paid.

(B) TOTAL DISABILITY

1. Temporary total disability: For temporary total disability, if there be no one residing in the United States totally dependent upon the workman at the time of the injury, compensation of sixty (60%) per cent of the average monthly wage, but not more than seventy-two (\$72) dollars nor less than thirty (\$30) dollars per month, but not exceeding one hundred months, during the period of such disability, total amount not to exceed seven thousand two hundred (\$7,200) dollars; if there be persons residing in the United States totally dependent for support upon the workman, compensation as provided herein with an additional allowance of ten (\$10) dollars per month for such dependents during the period of such disability.

Temporary total disability

Permanent
total
disability

2. Permanent total disability: In cases of total disability adjudged to be permanent, compensation of sixty (60%) per cent of the average monthly wage, but not less than thirty (\$30) dollars per month nor more than sixty (\$60) dollars per month during the life of the injured person.

In cases of the following specified injuries, in the absence of proof to the contrary, the disability caused thereby shall be deemed total and permanent:

1. The total and permanent loss of sight of both eyes.
2. The loss by separation of both legs at or above the knee.
3. The loss by separation of both arms at or above the elbow.

4. An injury to the spine resulting in permanent and complete paralysis of both legs or both arms, or one leg and one arm.

5. An injury to the skull resulting in incurable imbecility, or insanity.

6. The loss by separation of one arm at or above the elbow, and one leg by separation at or above the knee may be deemed a permanent total disability.

The above enumeration is not taken as exclusive; and in all other cases, permanent total disability shall be determined in accordance with the facts.

(C) PARTIAL DISABILITY

Temporary
partial
disability

1. Temporary partial disability: For temporary partial disability, sixty (60%) per cent of the difference between the wages earned before the injury and the wages which the injured person is able to earn thereafter, but not more than forty (\$40) dollars per month for a period not to exceed sixty (60) months during the period of said disability. For the purpose of this provision any excess of wages over one hundred and twenty (\$120) dollars per month shall not be taken into account in computing compensation for temporary partial disability.

Permanent
partial
disability

2. In case of any of the following specified injuries, the disability caused thereby shall be deemed a permanent partial disability, and compensation of fifty (50%) per cent of the average monthly wage, subject to a minimum of thirty (\$30) dollars per month and a maximum of sixty (\$60) dollars per month, shall be paid in addition to the compensation paid for temporary total disability for the period named in the following schedule:

Scheduled
disabilities

- (a) For the loss of a thumb, fifteen (15) months.
- (b) For the loss of a first finger, commonly called the index finger, nine (9) months.
- (c) For the loss of a second finger, seven (7) months.
- (d) For the loss of the third finger, five (5) months.
- (e) For the loss of the fourth finger, commonly called the little finger, four (4) months.
- (f) The loss of a distal or second phalange of the thumb, or the distal or third phalange of the first, second, third, or fourth finger, shall be considered a permanent partial dis-

ability, and equal to the loss of one-half of such thumb or finger, and compensation shall be one-half of the amount specified for the loss of the entire thumb or finger. Scheduled disabilities

(g) The loss of more than one phalange of the thumb or finger shall be considered as the loss of the entire finger or thumb; *provided, however*, that in no case shall the amount received for more than one finger exceed the amount provided in this schedule for the loss of a hand.

(h) For the loss of a great toe, seven (7) months.

(i) For the loss of one of the other toes other than the great toe, two and one-half ($2\frac{1}{2}$) months.

(j) However, the loss of the first phalange of any toe shall be considered to be equal to the loss of one-half of such toe, and compensation shall be one-half of the amount above specified.

(k) The loss of more than one phalange shall be considered as the loss of the entire toe.

(l) For the loss of a major hand, fifty (50) months; the loss of a minor hand, forty (40) months.

(m) For the loss of a major arm, sixty (60) months; for the loss of a minor arm, fifty (50) months.

(n) For the loss of a foot, forty (40) months.

(o) For the loss of a leg, fifty (50) months.

(p) For the loss of an eye by enucleation, thirty (30) months.

(q) The permanent and complete loss of sight in one eye without enucleation, twenty-five (25) months.

(r) For permanent and complete loss of hearing in one ear, twenty (20) months.

(s) For permanent and complete loss of hearing in both ears, sixty (60) months.

(t) The permanent and complete loss of the use of a finger, toe, arm, hand, foot, or leg may be deemed the same as the loss of any such member by separation.

(u) For the partial loss of use of a finger, toe, arm, hand, foot, leg, or partial loss of sight or hearing, fifty (50%) per cent of the average monthly wage during that proportion of the number of months in the foregoing schedule provided for the complete loss of use of such member, or complete loss of sight or hearing, which the partial loss of use thereof bears to the total loss of use of such member or total loss of sight or hearing.

(v) Facial disfigurement: For permanent disfigurement about the head or face, which shall include injury to or loss of teeth, the commission may allow such sum for compensation thereof as it may deem just, in accordance with the proof submitted, for a period not to exceed twelve (12) months.

(w) In all cases of permanent partial disability, not otherwise specified in the foregoing schedule, the percentage of disability to the total disability shall be determined. For the purpose of computing compensation for a disability that is partial in character but permanent in quality [fifty (50%)

Scheduled
disabilities

per cent of the average monthly wage not to exceed] the sum of sixty (\$60) dollars per month for the period of one (1) month shall represent a one (1%) per cent disability.

In determining the percentage of disability, consideration shall be given, among other things, to any previous disability, the occupation of the injured employee, the nature of the physical injury, and the age of the employee at the time of the injury.

(x) Where there is a previous disability, as the loss of one eye, one hand, one foot, or any other previous permanent disability, the percentage of disability for a subsequent injury shall be determined by computing the percentage of the entire disability and deducting therefrom the percentage of the previous disability as it existed at the time of the subsequent injury.

(y) The commission may adopt a schedule for rating permanent disabilities and reasonable and proper rules to carry out the provisions of this subsection.

No compensation shall be payable for the death or disability of an employee, if his death be caused by, or in so far as his disability may be aggravated, caused or continued by an unreasonable refusal or neglect to submit to or follow any competent and reasonable surgical treatment or medical aid. *As amended, Stats. 1915, c. 190, Stats. 1917, c. 233, and Stats. 1919, c. 176.*

The following rules for rating permanent partial disabilities, not included in the above schedule, and governing hernia cases, have been adopted by the commission:

Hand and Arm

Ratings
adopted by
commission

Amputation at shoulder or between shoulder and elbow, major arm 60 months; minor arm 50 months.

Amputation at elbow, major arm 56½ months; minor arm 46½ months.

Amputation between elbow and wrist joint, major arm 53½ months; minor arm 43½ months.

Amputation of hand at wrist, major hand 50 months; minor hand 40 months.

Fingers

Loss one-half distal phalange of thumb, 4 months.

Loss one-half distal phalange index finger, 2½ months.

Loss one-half distal phalange second finger, 1½ months.

Teeth

Loss of, or permanent damage to—
Incisors, \$20;
Bicuspsids, \$30;
Molars, \$40.

Hernia

RULE I. Real traumatic hernia is an injury to the abdominal (belly) wall of sufficient severity to puncture or tear asunder said wall, and permit the exposure or protruding of the abdominal viscera or some part thereof. Such an injury will be compensated as a temporary, total disability, and as a partial permanent disability, depending upon the lessening of the injured individual's earning capacity.

RULE II. All other hernias, whenever occurring or discovered and whatsoever the cause, except as under Rule I, are considered to be diseases causing incapacitating conditions, or permanent partial disability; but the permanent, partial disability and the causes of

such" are considered to be as shown by medical facts—to have either existed from birth; to have been years in formation, or both, and are not compensatory except as provided under Rule III. Ratings adopted by commission

RULE III. All cases coming under Rule II, in which it can be proven :

First, that the immediate cause, which calls attention to the presence of the hernia, was a sudden effort or severe strain or blow received while in the course of employment;

Second, that the descent of the hernia occurred immediately following the cause;

Third, that the cause was accompanied, or immediately followed, by severe pain in the hernial region;

Fourth, that the above facts were of such severity that the same were noticed by the claimant and communicated immediately to one or more persons;

are considered to be aggravations of previous ailments or diseases, and will be compensated as such for time loss only and to a limited extent only, depending upon the nature of the proof submitted and the result of the local medical examination, but not to exceed two months.

MISCELLANEOUS COMPENSATION PROVISIONS

SEC. 26. (a) The following persons shall be conclusively presumed to be totally dependent for support upon a deceased employee: Total dependents, who are

1. A wife upon a husband whom she has not voluntarily abandoned at the time of the injury;

2. A husband, mentally or physically incapacitated from wage earning, upon a wife whom he has not voluntarily abandoned at the time of injury;

3. A natural, posthumous, or adopted child or children, whether legitimate or illegitimate, under the age of eighteen years, or over that age, if physically or mentally incapacitated from wage earning, upon the parent with whom he or they are living at the time of the injury resulting in the death of such parent, there being no surviving parent. Step-parents may be regarded in this act as parents, if the fact of dependency is shown, and a step-child or step-children may be regarded in this act as a natural child or children, if the existence and fact of dependency is shown.

(b) Questions as to who constitute dependents and the extent of their dependency shall be determined as of the date of the accident or injury to the employee, and their right to any death benefit shall become fixed as of such time, irrespective of any subsequent change in conditions, and the death benefits shall be directly recoverable by and payable to the dependent or dependents entitled thereto, or to their legal guardians or trustees. *As amended, Stats. 1915, c. 190, and Stats. 1917, c. 233.* Dependency, how determined

SEC. 27. No compensation shall be paid under this act for an injury which does not incapacitate the employee for a period of at least seven days from earning full wages, but if the incapacity extends beyond the period of seven days, compensation shall begin on the eighth day after the injury; *provided, however*, that if such disability continues for one week beyond the period of said seven days, such compensation shall be computed from the date of the injury. *As amended, Stats. 1915, c. 190, and Stats. 1919, c. 176.* Compensation begins, when

Cannot be assigned or attached

SEC. 28. Compensation payable under this act, whether determined or due, or not, shall not, prior to the issuance and delivery of the warrant therefor, be assignable; shall be exempt from attachment, garnishment and execution, and shall not pass to an other person by operation of the law; *provided, however*, that the payments to the consul-general, consul, vice-consul general, or vice-consul, of the nation of which any dependent of a deceased employee is a resident or subject, or a representative of such consul-general, consul, vice-consul general, or vice-consul, of any compensation due under this act to any dependent residing outside of the United States, any power of attorney to receive or receipt for the same to the contrary notwithstanding, shall be as full a discharge of the benefits or compensation payable under this act as if payments were made directly to the beneficiary. *As amended, Stats. 1915, c. 190.*

Release or waiver void

SEC. 29. No employer or workman shall exempt himself from the burden, or waive the benefits of this act by any contract, agreement, rule, regulation, or device; and any such contract, agreement, rule, regulation, or device shall be absolutely void.

Obsolete

SEC. 30. Upon the marriage of a widow, she shall receive once and for all, a lump sum equal to twelve times her monthly allowance, not to exceed, however, the sum of \$300; *provided, however*, that allowance shall be made by the commission for the support of minor children under the age of sixteen years; the total amount thereof to be not less than \$10 nor more than \$35 per month, to be fixed by the commission.

[Repealed by implication; see paragraphs 2 and 10, Sec. 25, Death Benefits.]

Lump-sum payment, when

SEC. 31. The Nevada industrial commission, may, in its discretion, allow the conversion of the compensation herein provided for into a lump-sum payment, not to exceed the sum of \$5,000, under such rules and regulations and system of computation as may be devised for obtaining the present value of such compensation.

[Does not apply to total dependents; see paragraph 10, Sec. 25, Death Benefits.]

Injured workman must submit to medical examination, when

SEC. 32 (a) Any workman entitled to receive compensation under this act is required, if requested by the commission, to submit himself for medical examination at a time and from time to time at a place reasonably convenient for the workman, and as may be provided by the rules of the commission. The request or order for such examination shall fix a time and place therefor, due regard being had to the convenience of the employee and his physical condition and ability to attend at the time and place fixed. The employee shall be entitled to have a physician, provided and paid for by himself, present at any such examination. If the employee refuses to submit to any such examination, or obstructs the same, his right to compensation shall be suspended until such examination has taken place, and no compensation shall be payable during or for account of such period. Any physician who shall make or be present at any such examination may be required to testify as to the result thereof.

(b) If any employee shall persist in insanitary or injurious practices which tend to either imperil or retard his recovery, or shall refuse to submit to such medical or surgical treatment as is reasonably essential to promote his recovery, the commission may, in its discretion, reduce or suspend the compensation of any such injured employee.

Injurious
practices
suspend
compensa-
tion

(c) If, for the purpose of obtaining any benefit or payment under the provisions of this act, either for himself or for any other person, any one wilfully makes a false statement or representation, he shall be guilty of a misdemeanor, and if a claimant he shall forfeit all right to compensation under this act after conviction for such offense. *As amended, Stats. 1915, c. 190.*

False
statement.
penalty

NOTICE OF INJURY AND APPLICATION FOR COMPENSATION

SEC. 33. (a) Every employer electing to be governed by the provisions of this act, and every physician and surgeon who attends an injured employee, within the purview of this act, is hereby required to file with the commission, under such rules and regulations as the commission may from time to time make, a full and complete report of every known injury to an employee arising out of or in the course of his employment and resulting in loss of life or injury to such person. Such report shall be furnished to the commission in such form and in such detail as the commission may, from time to time prescribe, and shall make special answers to all questions required by the commission under its rules and regulations. It shall be unlawful for any person, firm or corporation, agent or officer of any firm or corporation, or any attending physician or surgeon to fail or refuse to comply with any of the provisions of this section; and any person, firm, or corporation, agent or officer of any firm or corporation, or physician or surgeon, who fails or refuses to comply with the provisions of this section, shall be guilty of a misdemeanor for each and every offense, and, upon conviction thereof, shall be punished by a fine of not less than fifty (\$50) dollars nor more than two hundred (\$200) dollars.

Employees
and
physicians
required
to report
injuries

(b) Any physician, having attended an employee within the purview of this act, in a professional capacity, may be required to testify before the commission when it shall so direct. Information gained by the attending physician or surgeon, while in attendance on the injured man, shall not be considered a privileged communication, if required by the commission for a proper understanding of the case and a determination of the rights involved.

Physicians
must testify
when
required

(c) Whenever any accident occurs to any employee, it shall be the duty of the employee to forthwith report such accident and the injury resulting therefrom to the employer, and it shall also be the duty of any physician employed by such injured employee to forthwith report such accident and the injury resulting therefrom to the employer and to the Nevada industrial commission. Whenever any accident occurs to any employee, and knowledge of same comes to the

Employee
required to
report injury

attention of the employer by such report or otherwise, the employer may at once designate, and send the physician so chosen by such employer and authorized by such employer in writing; and the physician so chosen shall be permitted by the employee or any person or persons in charge of said employee to make one examination of said injured employee in order to ascertain the character and extent of the injury occasioned by such accident. Thereupon, it shall be the duty of the said physician, so chosen, to forthwith report to the employer and to the Nevada industrial commission the character and extent of the said injury, as so ascertained by said physician.

Procedure
when injury
is not
reported

(d) If the happening of the said accident, or the infliction of said injury to said employee, shall not have been reported by said employee or his said physician forthwith, as above described and immediately after the happening of said accident and injury, or if the said injured employee or those in charge of him (the injured employee being a party to the refusal) shall refuse to permit the employer's physician, so chosen, to make such examination, no compensation shall be paid for the injury so claimed to result from said accident; but it shall be within the discretion of the Nevada industrial commission to relieve said injured person or his dependents from such loss or forfeiture of compensation, if the said Nevada industrial commission shall be of the opinion, after investigation, that the circumstances attending the failure on the part of the employee, or of his physician, to report said accident and injury are such as to have excused the said employee and his physician for such failure to so report, and that such relieving of the employee or his dependents from the consequences of such failure to report will not result in an unwarrantable charge against said state insurance fund. *As amended, Stats. 1917, c. 233.*

Workman
to file
application

SEC. 34. (a) Where a workman is entitled to compensation under this act he shall file with the department, his application for such, together with the certificate of the physician who attended him, and it shall be the duty of the physician to inform the injured workman of his rights under this act and to lend all necessary assistance in making this application for compensation and such proof of other matters as required by the rules of the department without charge to the workman.

Procedure
when death
results

(b) Where death results from injury to parties entitled to compensation under this act, or some one in their behalf, shall make application for the same to the department, which application must be accompanied with proof of death and proof of relationship showing the parties to be entitled to compensation under this act, certificates of attending physician, if any, and such other proof as required by the rules of the department.

Change of
compensation,
how

(c) If change of circumstances warrant an increase or rearrangement of compensation, like application shall be made therefor. No increase or rearrangement shall be operative for any period prior to application therefor.

(d) No application shall be valid or claim thereunder enforceable unless filed within one year after the day upon which the injury occurred or the right thereto accrued. One year limitation

SEC. 34½. Notice of the injury for which compensation is payable under this act shall be given to the commission as soon as practicable, but within thirty days after the happening of the accident. In case of the death of the employee resulting from such injury, notice shall be given to the commission as soon as practicable, but within sixty days after such death. The notice shall be in writing and contain the name and address of the injured employee and state in ordinary language the time, place, nature and cause of the injury and be signed by said injured employee, or by a person in his behalf, or in case of death, by one or more of his dependents or by a person on their behalf. No proceeding under this act for compensation for an injury shall be maintained unless the injured employee, or some one in his behalf, files with the commission a claim for compensation with respect to said injury within ninety days after the happening of the accident, or, in case of death, within one year after such death. The notice required by this section shall be served upon the commission, either by delivery to and leaving with it a copy of such notice, or by mailing to it by registered mail a copy thereof in a sealed, postpaid envelope addressed to the commission at its office, and such mailing shall constitute complete service; the failure to give such notice or to file such claim for compensation within the time limit specified in this section shall be a bar to any claim for compensation under this act, but such failure may be excused by the commission on one or more of the following grounds: (1) That notice for some sufficient reason could not have been made. (2) That failure to give such notice will not result in an unwarrantable charge against the state insurance fund. (3) That the employer had actual knowledge of the occurrence of the accident resulting in such injury. (4) That failure to give notice was due to employee's or beneficiary's mistake or ignorance of fact or of law, or of his physical or mental inability, or to fraud, misrepresentation or deceit. *Added, Stats. 1917, c. 233.* Notice of injury to be given within 30 days

EMPLOYER'S PAY-ROLL RECORDS

SEC. 35. The books, records, and pay-rolls of the employer pertinent to the administration of this act shall always be open to inspection by the commission or its traveling auditor, agent, or assistant, for the purpose of ascertaining the correctness of the pay-roll, the men employed, and such other information as may be necessary for the commission and its management under this act. Refusal on the part of the employer to submit said books, records, and pay-rolls for such inspection to any member of the commission or any assistant presenting written authority from the commission shall subject the offending employer to a penalty of one hundred dollars for each offense, to be collected by civil action in the Books, records and pay-rolls of employer open to commission

Penalty for refusal

name of the Nevada industrial commission and paid into the accident fund, and the individual who shall personally give such refusal shall be guilty of a misdemeanor.

Misrepresentation,
how
punished

SEC. 36. Any employer who shall misrepresent to the department the amount of pay-roll upon which the premium under this act is based shall be liable to the Nevada industrial commission in ten times the amount of the difference in premium paid and the amount the employer should have paid. The liability to the Nevada industrial commission shall be enforced in a civil action in the name of the Nevada industrial commission. All sums collected under this section shall be paid into the accident fund.

SEC. 37. [Repealed, Chapter 233, Stats. 1917.]

Commission to prosecute,
defend and
maintain
actions

SEC. 38. The Nevada industrial commission is hereby authorized and empowered to prosecute, defend, and maintain actions in the name of the commission for the enforcement of the provisions of this act, and verification of any pleading, affidavit, or other paper required may be made by any member of the commission or by the secretary thereof. In any action or proceeding or in the prosecution of any appeal by the commission, no bond or undertaking shall ever be required to be furnished by the commission.

ABSENCE OF SAFEGUARD

Penalty for
failure to
maintain
safeguards

SEC. 39. If any workman be injured because of the absence of any safeguard or protection required to be provided or maintained by, or pursuant to, any statute or ordinance or any departmental regulation under any statute, or be at the time of the injury of less than the maximum age prescribed by law for the employment of the minor in the occupation in which he shall be engaged when injured, the employer shall be liable to the Nevada industrial commission for a penalty of not less than \$300 or more than \$2,000 to be collected in a civil action at law by the commission.

Exception

The foregoing provision of this act shall not apply to the employer if the absence of such guard or such protection be due to the removal thereof by the injured workman himself, or with his knowledge, by any fellow-workman, unless such removal be by order or direction of the employer or superintendent or foreman of the employer. If the removal of such guard or protection be by the workman himself, or be by his consent, by any of his fellow-workmen, unless done by order or direction of the employer or superintendent or foreman of the employer, the compensation of such injured workman, as provided for by section 25 of this act, shall be reduced twenty-five per cent.

STATE INSURANCE FUND

What
constitutes

SEC. 40. (a) The premiums, contributions, penalties, properties, or securities paid, collected, or acquired by operation of this act shall constitute a fund to be known as the "State Insurance Fund." All disbursements from the state insurance fund shall be paid by the state treasurer upon

warrants or vouchers of the Nevada industrial commission authorized and signed by any two members of the commission. The state treasurer shall be liable on his official bond for the faithful performance of his duty as custodian of the state insurance fund. The State of Nevada shall not be liable for the payment of any compensation or any salaries or expenses in the administration of this act, save and except from the state insurance fund, but shall be responsible for the safety and preservation of the state insurance fund.

Manner of disbursement

Custodian

State not liable

(b) The Nevada industrial commission may, pursuant to a resolution of the commission, approved by the governor, invest any of the surplus or reserve of said fund in bonds of the United States, in the bonds of this or other states, in the bonds of any county of the State of Nevada or other states, in farm-loan bonds of the federal land banks, or in bonds of incorporated cities or school districts of the State of Nevada. The commission shall make due and diligent inquiry as to the financial standing of the state or states, county or counties, city or cities, school district or school districts, whose bonds or securities it proposes to purchase and shall also require the attorney-general to give his legal opinion in writing as to the validity of any act or acts of any state or county or city or school district under which said bonds are issued.

Investment of surplus funds

Attorney-General's approval of validity required

All such bonds or securities shall be placed in the hands of the state treasurer, who shall be the custodian thereof. He shall collect the principal and interest thereon when due, and pay the same into the state insurance fund. He shall notify the Nevada industrial commission of the amounts so paid into the state insurance fund, giving full details of the transaction. The state treasurer shall pay all vouchers drawn on the state insurance fund for the making of such investments, when signed by two members of the commission, upon delivery of such bonds or securities to him when there is attached to such vouchers a copy of the resolution of the commission authorizing the investment, approved by the governor, said copy to be certified by the secretary under seal of the commission. The commission may, upon its resolution approved by the governor, sell any of such bonds or securities.

Duties of state treasurer

Sale of bonds

(c) The state treasurer may, upon written authority of the Nevada industrial commission, approved by the governor, deposit twenty-five (25%) per cent of said fund in a bank or banks in the State of Nevada, fifteen (15%) per cent thereof to be deposited in open accounts bearing interest at not less than three (3%) per cent per annum, and ten (10%) per cent thereof to be deposited in time accounts, bearing interest at not less than four (4%) per cent per annum; *provided, however*, that such bank or banks in which deposits may be made shall give to the Nevada industrial commission a good and sufficient deposit bond guaranteeing said Nevada industrial commission against any loss of said deposits by reason of the failure, suspension or otherwise of said bank. Interest earned by such portion of the state insurance fund which may be deposited in any bank

Not to exceed 25% may be deposited in banks

Depositary bond required

or banks, as herein provided, shall be placed to the credit of the state insurance fund.

Members
must take
official oath
Bond, \$10,000

(d) Each member of the commission, before entering upon the duties of his office, shall give a good and sufficient bond running to the State of Nevada, and shall take the oath prescribed by the constitution, in the penal sum of ten thousand dollars, conditioned that he shall faithfully discharge the duties of his office; said bonds shall be signed by a surety company duly authorized to do business in this state, or by two or more individuals as surety or sureties; shall be subject to approval by the governor, and shall then be filed with the secretary of state. If surety-company bonds be furnished, the premium therefor shall be paid out of the state insurance fund as other expenses of the commission are paid.

Seal for
commission

(e) The commission shall have a seal upon which shall be inscribed the words "Nevada Industrial Commission—State of Nevada." Its seal shall be fixed to all orders, proceedings, and copies thereof, and to such other instruments as the commission may direct. All courts shall take judicial notice of such seal, and any copy of any record or proceeding of the commission certified under such seal shall be received in all courts as evidence of the original thereof. *As amended, Stats. 1915, c. 190, and Stats. 1919, c. 176.*

Audit of
accounts of
commission
must be
made

SEC. 40½. It shall be the duty of the industrial commission board, provided for by section 8 of this act, annually or as often as they may deem necessary to make an audit of all books of accounts and record and of funds and securities of the Nevada industrial commission, and said industrial commission board is authorized to employ and fix the compensation of a competent accountant for the purpose of making such audit or audits, the expenses thereof to be paid out of the state insurance fund. *Added, Stats. 1917, c. 233.*

Extra-
territorial
provision

SEC. 41. If a workman or employee within the provisions of this act, who has been hired in this state, and whose usual and ordinary duties of such employment are confined to the state, is sent out of the state on business or employment of his employer, and receives personal injury by accident arising out of and in the course of such employment, he shall be entitled to receive compensation according to the provisions of this act, even though such injury was received outside of this state. *As amended, Stats. 1915, c. 190.*

Title of act

SEC. 42. This act shall be known as the "Nevada Industrial Insurance Act."

ELECTION BY EXCLUDED EMPLOYMENTS

Exceptions
in applica-
tion of act

SEC. 43. (a) This act shall apply to all employers of labor in the State of Nevada and their employees and dependents of their employees, but excludes any employee engaged in farm or agricultural labor, stock or poultry raising, or household domestic service, except as otherwise provided herein; and no contract of employment, insurance, relief benefit, or indemnity, or any other device shall modify, change or waive any liability, created by this act; and such contract

of employment, insurance, relief benefit, or indemnity, or other device, having for its purpose the waiver or modification of the terms or liability created by this act, shall be void.

(b) Any employer of labor in the State of Nevada, having in his employment any employee excluded from the benefits of the act under subdivision (a) of this section and any such employee may, by their joint election, elect to come under the provisions of this act in the manner hereinafter provided.

Excepted
employ-
ments may
accept

(c) Such election on the part of the employer shall be made by filing with the commission a written statement that he accepts the provisions of the Nevada industrial insurance act, which, when filed, shall operate to subject him to the provisions of said act, and of all acts amendatory thereof, until such employer shall thereafter file in the office of the commission a notice in writing that he withdraws his election.

Manner of
acceptance
by employer

(d) Any employee in the service of any such employer, shall be deemed to have accepted, and shall be subject to the provisions of the Nevada industrial insurance act and of any act amendatory thereof, if, at the time of the accident for which compensation is claimed:

Acceptance
by employee

(1) The employer charged with such liability is subject to the provisions of this act, whether an employee has actual notice thereof or not; and

(2) Such employee shall not have given to his employer and to the Nevada industrial commission notice in writing that he elects not to be subject to the provisions of said act.

(e) Any such employee having the right under the provisions of this act to elect not to be subject to the provisions thereof who has rejected the provisions of this act may at any time thereafter elect to waive such acceptance by giving notice in writing to his employer and to the Nevada industrial commission, which shall become effective when filed with the Nevada industrial commission.

Rejection by
employee
may be sub-
sequently
waived

(f) Employers becoming contributors to the state insurance fund or the accident benefit fund, pursuant to the provisions of this section, shall be placed in a separate class, the premium rates of which shall be sufficient to provide an adequate fund for the payment of the proportionate administrative expense and compensation on account of injuries and death of employees of this class. *As amended, Stats. 1915, c. 190, and Stats. 1919, c. 176.*

Separate
records for
employ-
ments
accepting
as above
provided

CONSTRUCTION OF STATUTE

SEC. 44. If any employer shall be adjudicated to be outside the lawful scope of this act, the act shall not apply to him or his workmen, or if any workman shall be adjudicated to be outside the lawful scope of this act because of remoteness of his work from the hazard of his employer's work, any such adjudication shall not impair the validity of this act in other respects, and in every such case an accounting in accordance with the justice of the case shall be had of moneys received. If the provisions of section 21 of this act for the creation of the insurance fund, or the provisions of

Validity
of act not
impaired
if certain
employers
adjudged
exempt

this act making the compensation to the workman provided in it exclusive of any other remedy on the part of the workman, shall be held invalid, the entire act shall be thereby invalidated except the provisions of section 46, and an accounting according to the justice of the case shall be had of moneys received. In other respects an adjudication of invalidity of any part of this act shall not affect the validity of the act as a whole or any part thereof.

Disposition
of funds of
compensation
provisions
adjudged
invalid

SEC. 45. If the provisions of this act relative to compensation for injuries to or death of workmen become invalid because of any adjudication, or be repealed, the period intervening between the occurrence of an injury or death, not previously compensated for under this act by lump payment or completed monthly payments, and such repeal or the rendition of the final adjudication of the validity shall not be computed as a part of the time limited by law for the commencement of any action relating to such injury or death; *provided*, that such action be commenced within one year after such repeal or adjudication; but in any such action any sum paid out of the insurance fund to the workman on account of injury, to whom the action is prosecuted, shall be taken into account or disposed of as follows: If the defendant employer shall have paid without delinquency into the insurance fund the payment provided for by section 21, such sums shall be credited upon the recovery as payment thereon, otherwise the sum shall not be so credited, but shall be deducted from the sum collected and be paid into the said fund from which they had been previously disbursed.

Disposition
of fund if act
repealed

SEC. 46. If this act shall be hereafter repealed, all moneys which are in the insurance fund at the time of the repeal shall be subject to such disposition as may be provided by the legislature, and in default of such legislative provision distribution thereof shall be in accordance with the justice of the matter, due regard being had to obligations of compensation incurred and existing.

Not
retroactive

SEC. 47. This act shall not affect any action pending or cause of action existing on June 30, 1913.

SEC. 48. This act shall be effective July 1, 1913.

SEC. 49. All acts and parts of acts in conflict herewith are hereby repealed.

Invalidation
one section
shall not
affect other
sections

SEC. 50. It is hereby expressly provided that in the event any section of this act or the act of which this act is amendatory, shall be held by any court to be void or inoperative for any cause, such holding shall not affect any other section or provision contained in this act or the act of which this act is amendatory.

SEC. 51. Except as otherwise provided therein, this act shall be effective on and after July 1, 1919.

STATE OF NEVADA

List of Registered Automobiles
and Motorcycles, to
Mar. 31, 1919

Compiled by
GEORGE BRODIGAN
Secretary of State of the State of Nevada



CARSON CITY, NEVADA
STATE PRINTING OFFICE : : JOE FARNSWORTH, SUPERINTENDENT
1919

REGISTERED AUTOMOBILES AND MOTORCYCLES

(Compiled by GEORGE BRODIGAN)

The following pages, compiled in numerical rotation, contain names and addresses of owners who have registered their motor vehicles for the year 1919, with the Secretary of State up to and including March 31, 1919, together with the number of the official license-plate issued to each for use as prescribed by law.

This form was adopted at request of some of the officials whose duties include the enforcement of the motor-vehicle laws.

LIST OF REGISTERED AUTOMOBILES FOR 1919

Make of vehicle is given last.

- 30001...C. A. Stout, Reno, Cadillac.
 30002...Al L. Bailey, Washoe, Pope-Hartford.
 30003...Julius Schwarzhild, Reno, Chalmers.
 30004...John Lawton Butler, Currant, Ford.
 30005...John Lawton Butler, Currant, Chandler.
 30006...Henry Schempp, Reno, Buick.
 30007...John Cottrell, Sparks, Dodge.
 30008...John Schuller, Reno, Cadillac.
 30009...Mrs. Fannie Rinker, Reno, Dodge.
 30010...W. J. Webster, Reno, Ford.
 30011...Rev. Geo. C. Hunting, Reno, Dodge.
 30012...R. M. Chaplin, Reno, Hudson 6.
 30013...E. C. Watson, Luning, Ford.
 30014...George Wingfield, Reno, Cadillac.
 30015...George Wingfield, Reno, Packard.
 30016...C. F. Burton, Reno, Scripps-Booth.
 30017...Reno Securities Co., Reno, Federal.
 30018...Rudolf Miller, Fernley, Ford.
 30019...Bluestone M. & S. Co., Mason, Marmon.
 30020...Mrs. F. A. Bragg, Reno, Ford.
 30021...Reno Taxi Co., Reno, Reno.
 30022...Reno Taxi Co., Reno, Reno.
 30023...Reno Taxi Co., Reno, Reno.
 30024...Minnie Robinson, Mason, Ford.
 30025...Nat Lane, Mason, Cadillac.
 30026...Mike Pradere, Dayton, Buick.
 30027...S. Wrrutia, Dayton, Buick.
 30028...Phillip Cushing and wife, Reno, Dodge.
 30029...A. J. Loftus, Dayton, Cadillac.
 30030...Chas. H. Barry, Fallon, Ford.
 30031...E. S. Van Leer, Elko, Dodge.
 30032...E. S. Van Leer, Elko, Dodge.
 30033...Chas. E. Prime, Reno, Ford.
 30034...Dr. John P. Martin, Reno, Buick.
 30035...John Dacey (Indian), Palisade, Ford.
 30036...F. B. Headley, Fallon, Overland.
 30037...F. B. Headley, Fallon, Ford.
 30038...R. Barry, Golconda, Ford.
 30039...Harry R. Bischoff, Mason, Studebaker.
 30040...H. Lionberger, Fallon, Chevrolet.
 30041...Elko Tel. & Tel. Co., Elko, Packard.
 30042...Dr. Thos. H. Sufall, Ely, Cadillac.
 30043...Edward A. Smith, Reno, Hupmobile.
 30044...Geo. A. Steele, Fernley, Ford.
 30045...M. A. Robinson, Reno, Oakland.
 30046...H. T. Graves, Fernley, Chevrolet.
 30047...Reno Ice Delivery, Reno, Ford.
 30048...Reno Ice Delivery, Reno, Ford.
 30049...Reno Ice Delivery, Reno, Federal.
 30050...Reno Ice Delivery, Reno, Federal.
 30051...J. W. Carter, Reno, Ford.
 30052...Paul Katulus, Reno, Ford.
 30053...J. H. Gault, Reno, Ford.
 30054...C. P. Ball, Las Vegas, Flint.
 30055...C. P. Ball, Las Vegas, Cadillac.
 30056...C. P. Ball, Las Vegas, Pathfinder.
 30057...C. P. Ball, Las Vegas, Willys-Knight.
 30058...Standard Oil Co., East Ely, Republic.
 30059...Hobart Estate Co., Reno, Buick.
 30060...Hobart Estate Co., Reno, Service.
 30061...Hobart Estate Co., Reno, Maxwell.
 30062...Owen Halpin, Las Vegas, Ford.
 30063...M. J. Kelly, Manhattan, Ford.
 30064...Geo. H. Wilkings, Tonopah, Overland.
 30065...Geo. Russell Company, Elko, Ford.
 30066...Geo. Russell Company, Elko, Ford.
 30067...Geo. Russell Company, Elko, Ford.
 30068...Geo. Russell Company, Elko, Ford.
 30069...Geo. Russell Company, Elko, Cadillac.
 30070...Geo. Russell Company, Elko, Dodge.
 30071...J. A. Crescenzo, Austin, Buick.
 30072...Louis Lind, Reno, Ford.
 30073...Miles E. North, Reno, Oldsmobile.
 30074...Ellester & Rechel, Fernley, Ford.
 30075...West End Con. M. Co., Tonopah, Ford.
 30076...West End Con. Co., Tonopah, Chevrolet.
 30077...West End Con. Co., Pierce Arrow.
 30078...West End Con. Co., Pierce Arrow.
 30079...West End Con. Co., Pierce Arrow.
 30080...West End Con. M. Co., Tonopah, Signal.
 30081...West End Con. Co., Tonopah, Hudson.
 30082...H. D. Budelman, Tonopah, Chevrolet.
 30083...J. A. Sellstrom, Tonopah, Chevrolet.
 30084...J. A. Sellstrom, Tonopah, G.M.C.
 30085...Associated Oil Co., Reno, Ford.
 30086...Associated Oil Co., Reno, Federal.
 30087...C. A. Gavette, Las Vegas, Ford.
 30088...C. J. Gault, Reno, Chevrolet.
 30089...T. A. Jones, Fallon, Maxwell.
 30090...D. E. Williams, Fallon, Hupmobile.
 30091...Elkoro Mines Co., Jarbidge, Duplex.
 30092...Elkoro Mines Co., Jarbidge, Hudson.
 30093...E. L. Turner, Millers, Ford.
 30094...A. M. Bracken, Fallon, Overland.
 30095...Geo. Marchmont, Oasis, Calif., Ford.
 30096...Holt Mfg. Company, Reno, Buick.
 30097...Chas. C. Corkhill, Las Vegas, Dodge.
 30098...C. B. Moore, Deeth, Dodge.
 30099...F. J. Sauer, Washoe, Studebaker.
 30100...W. F. Sauer, Washoe, Studebaker.
 30101...Henry Boerlin, Aurora, Garford.
 30102...Mrs. L. McMurray, Tonopah, Marmon.
 30103...Victor Borasco, Sparks, Overland.
 30104...Nev.-Cal. L. Co., Constantia, Cal., Ford.
 30105...Nev.-Cal. L. Co., Constantia, Duplex.
 30106...Pyramid L. & S. Co., Constantia, Ford.
 30107...Pyramid L. & S. Co., Constantia, Federal.
 30108...Pyramid L. & S. Co., Constantia, Buick.
 30109...Pyramid L. & S. Co., Constantia, Ford.
 30110...Pyramid L. & S. Co., Constantia, Ford.
 30111...John Henderson, Elko, Franklin.
 30112...J. J. Bulena, Goldfield, Ford.
 30113...Key Pittman, Tonopah, Franklin.
 30114...Dr. Geo. McKenzie, Reno, Studebaker.
 30115...Clyde H. Wagner, Reno, Buick.
 30116...T. M. Beatty, Fallon, Maxwell.
 30117...Goodyear T. & R. Co., Reno, Dodge.
 30118...P. H. Wolf, Lovelock, Chalmers.
 30119...Western Silici Co., Beatty, Ford.
 30120...G. H. Marsh, Reno, Maxwell.
 30121...W. A. Reid, Goldfield, Ford.
 30122...M. R. Walker, Reno, Buick.
 30123...H. H. Marsh, Fallon, Chevrolet.
 30124...E. H. Hamilton, East Ely, Ford.
 30125...E. A. Nixon, Reno, Haynes.
 30126...Lena Wolfe, Reno, Willys-Knight.
 30127...Citizens Coal Co., Yerington, Buick.
 30128...C. C. Tidd, Smith, Reno.
 30129...Chas. W. Lund, Searchlight, Ford.
 30130...Robert Ray, Searchlight, Ford.
 30131...Nev. Packing Co., Reno, International.
 30132...Nevada Packing Co., Reno, Ford.
 30133...Nevada Packing Co., Reno, Ford.
 30134...Nevada Packing Co., Reno, Ford.
 30135...Washoe Market, Reno, Ford.
 30136...E. C. Newman, Reno, Ford.
 30137...Nevada Packing Co., Reno, Federal.
 30138...Miss Cora Crawford, Reno, Overland.
 30139...Hugh Dacus, Hasen, Buick.
 30140...E. L. Dutertre, Golconda, Overland.
 30141...E. L. Dutertre, Golconda, Ford.
 30142...Wm. Caffrey, Lovelock, Ford.
 30143...E. J. Steiner, Smith, Ford.
 30144...J. M. Pine, Austin, Ford.
 30145...A. Parker Lewis, Reno, Scripps-Booth.
 30146...T. B. Selby, Winnemucca, Studebaker.
 30147...T. B. Selby, Winnemucca, Reno.
 30148...T. B. Selby, Winnemucca, Reno.
 30149...Tonopah Belmont Dev. Co., Tonopah, Cadillac.
 30150...Jim Butler Tonopah M. Co., Tonopah, Locomobile.
 30151...A. Swanson, Reno, Studebaker.
 30152...Con. Spanish Belt M. Co., Tonopah, Dodge.
 30153...M. C. Quin, Tonopah, Ford.
 30154...Mrs. Thos. Sutton, Lovelock, Reno.
 30155...John Berger, Carson City, Ford.
 30156...W. S. Park, Las Vegas, Buick.
 30157...I. N. Frenchey, Fallon, Ford.
 30158...Goldfield Con. Water Co., Goldfield, Assembled.
 30159...Goldfield Con. W. Co., Goldfield, Ford.

30160....A. C. Otness, Goldfield, Ford.	30247....W. E. Brennan, Winnemucca, Ford.
30161....Roy J. Casey, Fallon, Ford.	30248....Mrs. J. D. Goodwin, Jarbridge, Buick.
30162....O. J. Vannoy, Fallon, Dodge.	30249....J. J. Williams, Las Vegas, Maxwell.
30163....O. J. Vannoy, Fallon, Ford.	30250....Lawrence Munk, Lovelock, Ford.
30164....C. A. Milberry, Reno, Studebaker.	30251....Mrs. Geo. B. Miller, Sparks, Winton.
30165....Brown-Milberry Inc., Reno, Maxwell.	30252....Martin Kofoed, Lovelock, Maxwell.
30166....L. A. Brown, Reno, Studebaker.	30253....C. A. Stone, Sparks, Willys-Knight.
30167....L. A. Brown, Reno, Studebaker.	30254....S. L. Pierce, Fallon, Chevrolet.
30168....Wm. M. Donovan, Silver City, Ford.	30255....Antelope Val. L. & C. Co., Fallon, Ford.
30169....T. & T. R. R. Co., Goldfield, Overland.	30256....B. E. Wiley, Lovelock, Ford.
30170....Mrs. E. P. Graham, Reno, Stuts.	30257....K. M. Becker, Sparks, Studebaker.
30171....J. R. McCulloch, Fernley, Dodge.	30258....C. J. McBride, Sparks, Studebaker.
30172....F. C. Ninnis, Tonopah, Hudson.	30259....H. J. Biddleman, Reno, Hudson.
30173....J. E. Troisi, Sparks, Ford.	30260....Louis J. Luchetti, Reno, Dodge.
30174....D. W. Gault, Reno, Ford.	30261....Brown & Sons, Brown Sta., Overland.
30175....Geo. Christenson, Reno, Ford.	30262....A. G. Brown, Brown Sta., Ford.
30176....L. Sandberg, Reno, Ford.	30263....R. M. Chaplin, Reno, Overland.
30177....Nathan Bulavsky, Reno, Ford.	30264....A. E. Albert, Reno, Buick.
30178....Bank of Sparks, Sparks, Ford.	30265....Jas. D. Warren, Reno, Ford.
30179....C. E. Bartlett, Fallon, Chevrolet.	30266....G. W. Cavnas, Stillwater, Oldsmobile.
30180....James Buckley, Golconda, Overland.	30267....A. B. Casey, Fallon, Chevrolet.
30181....Black Diamond M. Co., Golconda, Ford.	30268....H. C. Madsen, Reno, Dodge.
30182....M. C. Eastman, Winnemucca, Metc.	30269....Standard Oil Co., Tonopah, Nash Quad.
30183....A. N. Gault, Reno, Ford.	30270....Fred Sheldon, Lovelock, Ford.
30184....Georgia Biddleman, Lovelock, Studebaker.	30271....Eason Bros., Fallon, Maxwell.
30185....John H. Eason, Fallon, Dort.	30272....H. W. Nutton, Fallon, Overland.
30186....C. M. Way, Fallon, Buick.	30273....E. E. Reid, Reno, Willys-Knight.
30187....Dept. Highways, Carson City, Cadillac.	30274....Albert D. Ayres, Reno, Haynes.
30188....Dept. Highways, Carson City, Chevrolet.	30275....Tonopah Ex. Mgr., Tonopah, Federal.
30189....Dept. Highways, Carson City, Buick.	30276....Tonopah Ex. Mgr., Tonopah, Federal.
30190....Dept. Highways, Carson City, Ford.	30277....Wm. M. Gardner, Reno, Overland.
30191....Dept. Highways, Carson City, Ford.	30278....Myrtle Z. Hawkins, Reno, Hudson.
30192....Dept. Highways, Carson City, Ford.	30279....H. G. Hubbard, Constantia, Ford.
30193....Dept. Highways, Carson City, White.	30280....Wm. Meyers, Reno, Willys Overland.
30194....Dept. Highways, Carson City, Ford.	30281....Chas. S. Knight, Reno, Overland.
30195....Dept. Highways, Carson City, Fordson.	30282....W. F. Edwards, Reno, Overland.
30196....Dept. Highways, Carson City, Fordson.	30283....Mrs. Mary Grell, Reno, Oldsmobile.
30197....The I. H. Kent Co., Fallon, Ford.	30284....W. W. Means, Elko, Dodge.
30198....The I. H. Kent Co., Fallon, Vim.	30285....Dr. J. J. Sullivan, Reno, Buick.
30199....The I. H. Kent Co., Fallon, Vim.	30286....J. A. Ranny, Reno, Studebaker.
30200....The I. H. Kent Co., Fallon, Ford.	30287....W. H. Owens, Reno, Ford.
30201....The I. H. Kent Co., Fallon, Ford.	30288....E. L. Brooks, Fallon, Ford.
30202....I. H. Kent, Fallon, Pierce Arrow.	30289....Peter Jensen, Reno, Cole 8.
30203....The I. H. Kent Co., Fallon, Pierce Arrow.	30290....Peter Jensen, Reno, Chevrolet.
30204....James Jensen, Lovelock, Ford.	30291....A. E. Painter, Reno, Maxwell.
30205....S. Peterson, Sparks, Reo.	30292....Rue Montgomery, Goldfield, Ford.
30206....H. E. Bladell, Sparks, King.	30293....C. H. Ross, Goldfield, Ford.
30207....W. H. Boman, Hazen, Studebaker.	30294....E. B. Green, Goldfield, Ford.
30208....Chiatovich & Beko, Tonopah, Chevrolet.	30295....J. B. Black, Goldfield, Ford.
30209....Phillip J. Wolf, Goldfield, Ford.	30296....W. R. Moore, Goldfield, Ford.
30210....Thos. B. Coe, Fallon, Reo.	30297....Madison E. Locke, Keystone, Ford.
30211....Jno. Jurgenson, Lovelock, Dort.	30298....Madison E. Locke, Keystone, Ford.
30212....Jno. Jurgenson, Lovelock, Ford.	30299....Dr. F. M. West, Lovelock, Reo.
30213....Frank L. Bellows, Reno, Buick.	30300....Yparaguirre Sisters, Reno, Dodge.
30214....Mutual Creamery Co., Reno, Ford.	30301....Joe Malhney, Packard, Ford.
30215....Robert Lewers, Reno, Willys-Knight.	30302....S. B. Cooper, Reno, Ford.
30216....Williams Estate Co., Fallon, Ford.	30303....E. R. Dodge, Reno, Lexington.
30217....Williams Estate Co., Fallon, Ford.	30304....Yparaguirre Bros., Sweetwater, Cad.
30218....Williams Estate Co., Fallon, Ford.	30305....Yparaguirre Bros., Haynes.
30219....Williams Estate Co., Fallon, Dodge.	30306....Samuel C. Cook, Elko, Dodge.
30220....Williams Estate Co., Fallon, Pierce Ar.	30307....Ralph Smith, Tuscarora, Dodge.
30221....W. A. Keddie, Fallon, Pierce Arrow.	30308....L. G. Clark, Elko, Hudson.
30222....Williams Estate Co., Fallon, Pierce Ar.	30309....Chas. A. Swingle, Searchlight, Ford.
30223....Reno P. L. & W. Co., Reno, Vim.	30310....M. L. Lee, Pioche, Chevrolet.
30224....Reno P. L. & W. Co., Reno, Ford.	30311....Virginia Louise M. Co., Pioche, Ford.
30225....Reno P. L. & W. Co., Reno, Ford.	30312....J. S. Mills, Fallon, Ford.
30226....Reno P. L. & W. Co., Reno, Ford.	30313....Percy E. Mills, Fallon, Ford.
30227....Reno P. L. & W. Co., Reno, Buick.	30314....F. Clifford Shaffer, Fallon, Ford.
30228....Truckee R. G. E. Co., Reno, Buick.	30315....A. D. Munroe, Yerington, Ford.
30229....Truckee R. G. E. Co., Reno, Buick.	30316....Mrs. W. W. Stockham, Pioche, Ford.
30230....Reno P. L. & W. Co., Reno, Cadillac.	30317....A. L. Scott, Pioche, Ford.
30231....Reno P. L. & W. Co., Reno, Buick.	30318....Henry Bowling, Pioche, Ford.
30232....Reno P. L. & W. Co., Reno, Cartcar.	30319....John White, Goldfield, Ford.
30233....Reno P. L. & W. Co., Reno, Dodge.	30320....A. A. Carman, Pioche, Ford.
30234....Reno P. L. & W. Co., Reno, Buick.	30321....D. Pezzi, Reno, Buick.
30235....Reno P. L. & W. Co., Reno, Buick.	30322....C. T. Lawrence, Manhattan, Ford.
30236....Reno Brewing Co., Inc., Reno, Ford.	30323....John Borge, Yerington, Studebaker.
30237....Reno Brew. Co., Inc., Reno, Chalmers.	30324....C. Metz, Yerington, Briscoe.
30238....Reno Brewing Co., Inc., Reno, Dorris.	30325....Ed. Hansen, Yerington, Studebaker.
30239....Reno Brewing Co., Inc., Reno, Staver.	30326....Henry Gutschow, Lovelock, Maxwell.
30240....Reno Brew. Co., Inc., Reno, Ruthenber.	30327....Matt Smith, Lovelock, Oakland.
30241....Reno Brewing Co., Inc., Reno, Ford.	30328....Rodgers Ranch, Lovelock, Ford.
30242....Reno Mercantile Co., Reno, Ford.	30329....Wm. McDulloch, Lovelock, Oakland.
30243....James Leon Barber, Reno, Ford.	30330....Rodgers Ranch, Lovelock, Ford.
30244....Reno Mercantile Co., Reno, Ford.	30331....James N. Clifford, Tonopah, Chalmers.
30245....E. L. Christenson, Reno, Ford.	30332....Carl Deossell, Tonopah, Ford.
30246....A. J. Alves, Lovelock, Studebaker.	30333....C. O. Degraw, Wellington, Ford.

- 30384...R. J. Swope, Fallon, Dodge.
 30385...Ray Johnson, Fallon, Ford.
 30386...William S. Welch, Reno, Maxwell.
 30387...J. Poncia, Sparks, Dodge.
 30388...M. E. Williams, Reno, Chandler.
 30389...C. Maggiolo, Reno, Reo.
 30390...W. Stropfer, Goodsprings, Locomobile.
 30391...W. E. Stromer, Goodsprings, Ford.
 30392...Clarence Johnson, Eureka, Ford.
 30393...Guy J. Blacett, Gerlach, Federal.
 30394...Sparks Transfer Co., Sparks, Ford.
 30395...Sparks Transfer Co., Sparks, Federal.
 30396...E. A. Williams, Las Vegas, Reo.
 30397...Louis Raffetto, Reno, Hupmobile.
 30398...Wm. K. Smith, Sparks, Dodge.
 30399...J. L. Seifert, Sparks, Ford.
 30400...Tony Brackett, Manhattan, Ford.
 30401...Tony Brackett, Manhattan, Ford.
 30402...Chas. B. White, Reno, Buick.
 30403...Geo. Q. Dickie, Reno, Ford.
 30404...Jas. E. Wilson, Goldfield, Ford.
 30405...O. H. Riffe, Goldfield, Ford.
 30406...G. Del Wolfensparger, Reno, Chandler.
 30407...Shufelt & Riley, Reno, Ford.
 30408...Shufelt & Riley, Reno, Jeffery.
 30409...Joe Michel, Tonopah, Studebaker.
 30410...F. E. Cline, Reno, Reo.
 30411...Umatilla Ton. M. Co., Tonopah, Ford.
 30412...Wilfred Craig, Tonopah, Hup.
 30413...Rhodes Salt & Borax Co., Mina, Ford.
 30414...Rhodes Salt & B. Co., Mina, Garford.
 30415...A. H. Rhoades, Mason, Ford.
 30416...C. B. Leach, Goldfield, Ford.
 30417...W. J. Shank, Reno, Haynes.
 30418...A. J. Stankey, Sparks, Ford.
 30419...A. B. Sisson, Sparks, Buick.
 30420...Jas. S. Dorfner, Sparks, Ford.
 30421...R. C. Mabson, Reno, Ford.
 30422...G. G. Gault, Fallon, Ford.
 30423...Frank McBride, Fallon, Buick.
 30424...Mrs. M. Lundsted, Las Vegas, Ford.
 30425...J. Manz, Fallon, Buick.
 30426...Vik Sebbas, Lovelock, Reo.
 30427...Chas. Keller, Reno, Overland.
 30428...G. H. McCormick, Lovelock, Oldsmobile.
 30429...G. H. McCormick, Lovelock, Ford.
 30430...W. H. Davis, Goodsprings, Ford.
 30431...Ed. Uren, Jr., Battle Mountain, Ford.
 30432...Ed. Uren, Jr., Battle Mountain, Ford.
 30433...L. E. Kendrick, Battle Mtn., Ford.
 30434...Thos. Durman, Lovelock, Ford.
 30435...W. G. Adams, Battle Mtn., Chevrolet.
 30436...Chester Anker, Lovelock, Ford.
 30437...M. Jensen, Sparks, Maxwell.
 30438...Battle Mtn. Hilltop Stage Line, Battle Mountain, Maxwell.
 30439...Frank Jones, Fernley, Buick.
 30440...Gus Holmby, Reno, Ford.
 30441...Mason Val. M. Co., Thompson, Cadillac.
 30442...Mason V. M. Co., Thompson, Pierce A.
 30443...C. D. Terwilliger, Reno, Hudson 6.
 30444...Verdi Lumber Co., Reno, Hupmobile.
 30445...Verdi Lumber Co., Reno, Maxwell.
 30446...Verdi Lumber Co., Reno, Federal.
 30447...Verdi Lumber Co., Reno, Dorria.
 30448...W. J. Machabee, Reno, Maxwell.
 30449...John G. Taylor, Lovelock, Ford.
 30450...John G. Taylor, Lovelock, Ford.
 30451...John G. Taylor, Lovelock, Ford.
 30452...John G. Taylor, Lovelock, Ford.
 30453...John G. Taylor, Lovelock, Ford.
 30454...John G. Taylor, Lovelock, Dodge.
 30455...J. G. Taylor, Lovelock, Willys-Knight.
 30456...C. G. Swingle, Hazen, Ford.
 30457...Thos. Vicodoro, Winnemucca, Overland.
 30458...N. J. Barry, Reno, Haynes.
 30459...Schreck Bros., Smith, Dodge.
 30460...LeRoy N. French, Reno, Franklin.
 30461...S. A. Kinnel, Yerington, Dodge.
 30462...Mikado Laundry, Reno, Ford.
 30463...H. L. Connor, Reno, Ford.
 30464...Wm. Penrose, Reno, Ford.
 30465...M. Cohen, Reno, Ford.
 30466...C. J. Dormino & Co., Reno, Ford.
 30467...P. Isaacson, Mason, Oakland 6.
 30468...A. H. Forbush, Yerington, Chevrolet.
 30469...H. E. Gorssline, Yerington, Ford.
 30470...Roland J. Giroux, Dyer, Cadillac.
 30471...J. C. Mathews, Yerington, Hudson.
 30472...W. T. Dalby—C. R. Mitchell, Verdi, Fd.
 30473...John A. Gordon, Goldfield, Ford.
 30474...Jas. J. Kelly, Yerington, Dodge.
 30475...Standard Oil Co., Reno, Ford.
 30476...Willis W. Caffrey, Reno, Ford.
 30477...C. P. Adams, Battle Mountain, Dodge.
 30478...J. Belaustegui, Battle Mountain, Ford.
 30479...Mrs. E. E. Horton, Battle Mtn., Chev.
 30480...Horton Merc. Co., Battle Mtn., Ford.
 30481...W. W. Carpenter, Lovelock, Case.
 30482...W. W. Carpenter, Lovelock, Case.
 30483...J. L. Keyser, Elko, Oldsmobile.
 30484...Albert Hankins, Lee, Franklin.
 30485...Albert Hankins, Lee, Oldsmobile.
 30486...Paul Tholl, Sparks, Ford.
 30487...Mrs. A. T. Eveleth, Verdi, Buick.
 30488...Angello Oppio, Sparks, Reo.
 30489...A. C. Graetz, Reno, Ford.
 30490...Olney Leighton, Eureka, Ford.
 30491...W. E. Conrad, Fallon, Studebaker.
 30492...Fred Waldey, Fallon, Ford.
 30493...E. S. Cunningham, Wonder, Hudson.
 30494...Chas. Phillips, Goldfield, Ford.
 30495...Frank Fraser, Miller, Ford.
 30496...G. M. Reading, Hawthorne, Ford.
 30497...G. M. Reading, Hawthorne, Packard.
 30498...G. M. Reading, Hawthorne, Packard.
 30499...Mrs. Kate I. Nixon, Reno, Locomobile.
 30500...John Monser, Searchlight, Ford.
 30501...J. E. Griffith, Searchlight, Studebaker.
 30502...E. E. Perkins, Searchlight, Ford.
 30503...James Cashman, Searchlight, Overland.
 30504...James Cashman, Searchlight, Overland.
 30505...James Cashman, Searchlight, White.
 30506...James Cashman, Searchlight, White.
 30507...G. A. Bragg, Thompson, Buick.
 30508...Walter C. Bean, Bruner, Dort.
 30509...T. J. Critchley, Elko, Dodge.
 30510...Tony Navavan, Battle Mtn., Studebaker.
 30511...Fred Newton, Tonopah, Ford.
 30512...Nevada State Prison, Cadillac.
 30513...Nevada State Prison, Locomobile.
 30514...Nevada State Prison, Ford.
 30515...Pioche Mines Co., Pioche, Ford.
 30516...Pioche M. Co., Pioche, Jeffery Quad.
 30517...Pioche Mines Co., Pioche, Ford.
 30518...Ben Halestine, Packard, Ford.
 30519...Union Oil Co. of Nev., Minden, Ford.
 30520...Union Oil Co. of Nev., Minden, White.
 30521...Union Oil Co. of Nev., Reno, White.
 30522...Union Oil Co., Reno, Studebaker.
 30523...Union Oil Co. of Nev., Reno, Ford.
 30524...H. F. Holmshaw, Reno, Buick.
 30525...James Cuyler, Wadsworth, Ford.
 30526...P. E. DuBois, Wadsworth, Ford.
 30527...Chas. W. Wheeler, Reno, Saxon 6.
 30528...A. J. Rochon, Packard, Ford.
 30529...A. Reno, Lovelock, Reo.
 30530...The Holt Mfg. Co., Fallon, Ford.
 30531...J. H. Deck, Pioche, Ford.
 30532...J. H. Deck, Pioche, Dodge.
 30533...Wm. R. McKee, Fallon, Ford.
 30534...W. A. Mundy, Las Vegas, Ford.
 30535...Amos E. Lyons, Fallon, Ford.
 30536...James German, Las Vegas, Oakland.
 30537...F. N. Haight, Las Vegas, Dodge.
 30538...F. W. Schwanbeck, Goodsprings, White.
 30539...F. W. Schwanbeck, Goodsprings, Buick.
 30540...Azores Merc. Co., Lovelock, Ford.
 30541...John Jory, Battle Mountain, Ford.
 30542...Maute Esser, Carson City, Ford.
 30543...Roy Mitchell, Mound House, Ford.
 30544...Union Land & Cattle Co., Reno, Buick.
 30545...George Alton, Reno, Ford.
 30546...Langley & Michael, Reno, Ford.
 30547...B. F. Bryant, Lovelock, Ford.
 30548...Tom P. Ebert, Lovelock, Oakland.
 30549...J. S. Wisner, Las Vegas, Ford.
 30550...J. S. Woodbury, Silver City, Maxwell.
 30551...Edward M. Hall, Reno, Dodge.
 30552...T. F. Carney, Smith, Ford.
 30553...Mrs. H. H. Kent, Stillwater, Chandler.
 30554...C. W. Grover, Carson City, Maxwell.
 30555...E. Kent, Stillwater, Dodge.
 30556...W. A. Paul, Fallon, Ford.

- 30507...W. A. Cramar, Fallon, Chevrolet.
 30508...A. B. Moberg, Sparks, Buick.
 30509...Handley Bros., Eureka, Dodge.
 30510...Handley Bros., Eureka, Ford.
 30511...Pete Carletti, Eureka, Ford.
 30512...C. F. Goegg, Wadsworth, Ford.
 30513...J. J. Garrecht, Elko, Overland.
 30514...Wm. E. Hammond, Urstine, Ford.
 30515...Geo. R. Worn, Reno, Reo.
 30516...C. F. O'Brien, Battle Mtn., Studebaker.
 30517...L. Greilich, Lovelock, Dodge.
 30518...L. Greilich, Lovelock, Ford.
 30519...Nels Jensen, Lovelock, Reo 4.
 30520...John T. Wilson, Reno, Hudson.
 30521...Jas. Kjeldsen, Lovelock, Ford.
 30522...D. E. Hugens, Lovelock, Buick.
 30523...J. C. Post, Lovelock, Ford.
 30524...Gus Sund, Lovelock, Chevrolet.
 30525...Chas. Rost, Lovelock, Reo.
 30526...C. W. Stock, Fernley, Buick.
 30527...Thos. J. Wilson, Fallon, Ford.
 30528...Henry Kremmel, Yerington, Ford.
 30529...Mrs. J. W. Dougherty, Yerington, Chev.
 30530...J. P. Fitzgerald, Gardnerville, Buick.
 30531...Wm. C. Ast, Lovelock, Reo.
 30532...Geo. Loverato, Reno, Studebaker.
 30533...Grosbeck & O'Brien Co., Reno, Winton.
 30534...Grosbeck & O'Brien Co., Great Eagle.
 30535...Grosbeck & O'Brien Co., Cadillac.
 30536...J. H. Stotesbury, Reno, Studebaker.
 30537...W. H. Jones, Reno, Overland.
 30538...J. F. Cutler, Reno, Ford.
 30539...Cora May Sellman, Reno, Buick.
 30540...J. C. Coniff, Reno, Dodge.
 30541...W. E. Smith, Tecoma, Buick.
 30542...F. E. Dressler, Sheridan, Studebaker.
 30543...Herb Dressler, Gardnerville, Studebaker.
 30544...H. J. Elges, Gardnerville, Buick.
 30545...Carl Kuhn, Reno, Dodge.
 30546...Sam Imelli, Franktown, Overland.
 30547...W. D. West, Reno, Cadillac.
 30548...Fred Allerman, Gardnerville, Dodge.
 30549...J. J. Martin, Wellington, Ford.
 30550...Thos. Roe, Smith, Ford.
 30551...L. J. Ginocchio, Reno, Federal.
 30552...L. J. Ginocchio, Reno, Reo.
 30553...F. Zunnino, Reno, Republic.
 30554...C. B. Chesnutt, Lovelock, Ford.
 30555...L. P. Johnson, Lovelock, Reo.
 30556...Thomas A. Wright, Sparks, Oldsmobile.
 30557...F. S. Williams, Ludwig, Ford.
 30558...A. Mencarini, Yerington, Ford.
 30559...Rhoda L. Laube, Tonopah, Dodge.
 30560...Mrs. Grace Mershon, Goldfield, Buick.
 30561...Chas. W. Williams, Elko, Dodge.
 30562...Warren W. Miller, Fallon, Buick.
 30563...Frank Lucas, Mason, Buick.
 30564...D. D. Ogilvie, Elko, Ford.
 30565...R. W. Sawyer, Hilltop, Ford.
 30566...F. A. Dalton, Stillwater, Buick.
 30567...Ben Cambron, Fallon, Buick.
 30568...Chas. Wolbersloh, Fallon, Ford.
 30569...O. Eckman, Jr., Battle Mtn., Stude.
 30570...W. T. Roberts, Nixon, Chevrolet.
 30571...Mrs. F. M. Reed, Reno, Ford.
 30572...Theo. Craig, Jean, Ford.
 30573...Theo. Craig, Jean, Ford.
 30574...Geo. E. Roth, Jean, Buick.
 30575...E. Plumb, Reno, Ford.
 30576...Jean S. Tallman, Tonopah, Chevrolet.
 30577...W. Churchyard, Yerington, Chalmers.
 30578...Land Dev. Co., Battle Mtn., Ford.
 30579...Geo. W. Webster, Yerington, King 8.
 30580...J. I. Wilson, Yerington, Maxwell.
 30581...Jos. W. Wilson, Yerington, Buick.
 30582...Geo. F. Willis, Yerington, Ford.
 30583...M. G. Smith, Tonopah, Ford.
 30584...Clark Guild, Yerington, Buick.
 30585...T. Cardelli, Dayton, Buick.
 30586...Roy H. Haakin, Stillwater, Maxwell.
 30587...John Dynan, Tonopah, Overland.
 30588...Max Herman, McGill, Dodge.
 30589...L. M. Cline, Smith, Reo.
 30590...J. W. Pierce, Wellington, Ford.
 30591...H. C. Keema, Mason, Dodge.
 30592...John Polwick, Dyer, Ford.
 30593...H. A. Reid, Tonopah, Hudson.
 30594...Emily Damm, Lovelock, Ford.
 30595...A. E. Hemikson, Lovelock, Ford.
 30596...John Beterbide, Lovelock, Ford.
 30597...E. E. Parlin, Lovelock, Chevrolet.
 30598...W. G. Cotter, Reno, Maxwell.
 30599...P. B. Roberti, Reno, Reo 6.
 30600...J. Miramon, Reno, Cadillac.
 30601...Associated Laundries, Reno, Ford.
 30602...Associated Laundries, Reno, Vim.
 30603...Associated Laundries, Reno, Ford.
 30604...Associated Laundries, Reno, Ford.
 30605...Associated Laundries, Reno, Ford.
 30606...Associated Laundries, Reno, Cadillac.
 30607...Economy Laundry Co., Reno, Ford.
 30608...Economy Laundry Co., Reno, Ford.
 30609...Chas. Pefley, Reno, Chevrolet.
 30610...Arthur V. Woodie, Francis, Ford.
 30611...C. Berquist, Reno, Ford.
 30612...O. R. McGinty, Reno, Overland.
 30613...Lottie May Ferrel, Reno, Briscoe.
 30614...Geo. L. Bryson, Reno, Ford.
 30615...Jeff Trent, Sparks, Buick.
 30616...A. L. Peterson, Sparks, Monroe.
 30617...Jas. Larson, Sparks, Studebaker.
 30618...L. L. Gilcrease, Reno, Hudson.
 30619...Al Brundidge, Reno, Ford.
 30620...John J. Oliver, Reno, Chalmers.
 30621...E. D. Madalena, Reno, Chalmers.
 30622...Harry W. Sommer, Lovelock, Ford.
 30623...John Cachenaunt, Luning, Buick.
 30624...Harry Fray, Reno, Ford.
 30625...Walter Malone, Reno, Buick.
 30626...Leach Bros., Cherry Creek, Maxwell.
 30627...S. C. Shirley, Elko, Hudson.
 30628...W. D. Trout, Las Vegas, Ford.
 30629...Pedro C. Mello, Lovelock, Ford.
 30630...Phillip Anker, Lovelock, Ford.
 30631...Phillip Anker, Lovelock, Reo 4.
 30632...L. R. Bassman, Lovelock, Reo.
 30633...B. E. Stoker, Lovelock, Ford.
 30634...L. J. Gorr, Lovelock, Ford.
 30635...Ray Clemons, Lovelock, Ford.
 30636...Emil Stauk, Lovelock, Oakland.
 30637...Andrew Jacobson, Lovelock, Buick.
 30638...Wm. Jacobs, Lovelock, Ford.
 30639...Leo Schattschneider, Fallon, Ford.
 30640...A. L. Haight, Fallon, Chandler.
 30641...H. W. Reppert, Fallon, Ford.
 30642...C. B. Burr, Fallon, Dodge.
 30643...Chas. E. Coe, Fallon, Ford.
 30644...W. F. Kaiser, Fallon, Oldsmobile.
 30645...H. E. Roe, Fallon, Dodge.
 30646...David Erkid, Fallon, Ford.
 30647...Geo. G. Miller, Fallon, Ford.
 30648...L. Grebenc, Iron Point, Ford.
 30649...W. W. Stotesbury, Tonopah, Haynes.
 30650...Fratris Bros., Yerington, Buick.
 30651...Joe Sario, Yerington, Ford.
 30652...Nev. Standard Copper Co., Mina, Ford.
 30653...C. S. Creakbaum, Omco, Chevrolet.
 30654...Louis Piretto, Reno, Ford.
 30655...Lincoln Tran. Co., Pioche, Ford.
 30656...Lincoln Tran. Co., Pioche, Ford.
 30657...Lincoln Tran. Co., Pioche, Ford.
 30658...Lincoln Tran. Co., Pioche, Chandler.
 30659...Lincoln Tran. Co., Pioche, Dodge.
 30660...W. L. Aplin, Las Vegas, Monroe.
 30661...W. L. Aplin, Las Vegas, Ford.
 30662...Ida E. Lipman, Reno, Dort.
 30663...Jas. Daley, Virginia City, Reo.
 30664...C. B. Newcombe, Yerington, Overland.
 30665...A. Scossa, Yerington, Buick.
 30666...Wm. Klaus, Reno, Haynes.
 30667...John A. Fuller, M.D., Reno, Hupmobile.
 30668...Dan Long, Fallon, Ford.
 30669...G. T. Coleman, Fallon, Overland.
 30670...W. S. Vaughn, Fallon, Buick.
 30671...Gunn Supply Co., Las Vegas, Ford.
 30672...W. H. Robinson, Yerington, Maxwell.
 30673...Georgia T. Marker, Lovelock, Ford.
 30674...F. J. Winzell, Palisade, Ford.
 30675...E. A. Perez, Lovelock, Reo.
 30676...Pleasant Grove Meat Co., Lovelock, Ford.
 30677...Rice Maupin, Las Vegas, Dodge.
 30678...Angelo Lynch, Pioche, Ford.
 30679...H. W. Underhill, Caliente, Ford.
 30680...J. B. Stott, Mina, Buick.
 30681...Nels Erickson, Mina, Ford.

- 30682...Conklin Bros., Las Vegas, Dodge.
 30683...Conklin Bros., Las Vegas, Republic.
 30684...J. G. Bolander, Reno, Chevrolet.
 30685...W. F. Jackman, Verdi, Ford.
 30686...Ike Stroenider, Yerington, Buick.
 30687...Emilio Brunetti, Reno, Ford.
 30688...Placido Gacopetti, Reno, Maxwell.
 30689...Joe Brunetti, Reno, Ford.
 30690...Dr. F. T. Brown, Minden, Overland.
 30691...Standard Oil Co., Winnemucca, Ford.
 30692...Standard Oil Co., Goldfield, Ford.
 30693...Standard Oil Co., East Ely, Dodge.
 30694...Standard Oil Co., East Ely, Packard.
 30695...Standard Oil Co., Carson City, White.
 30696...Standard Oil Co., Carson City, Ford.
 30697...Standard Oil Co., Elko, Ford.
 30698...Standard Oil Co., Fallon, Ford.
 30699...Standard Oil Co., Fallon, Maxwell.
 30700...George S. Green, Reno, Cadillac.
 30701...Standard Oil Co., Fallon, White.
 30702...Standard Oil Co., Tonopah, Ford.
 30703...Standard Oil Co., Tonopah, Mack.
 30704...A. Pannelli, Dayton, Buick.
 30705...Silas E. Ross, Reno, Houghton.
 30706...Silas E. Ross, Reno, Sayres & Scoville.
 30707...John Ericks, Carson City, Ford.
 30708...Perkins Gulling Co., Reno, Studebaker.
 30709...Perkins Gulling Co., Reno, Studebaker.
 30710...J. D. Hillhouse, Reno, Monroe.
 30711...J. C. Morris, Mina, Ford.
 30712...Emil Holmstrom, Lovelock, Chalmers.
 30713...Wm. H. Dorsett, Winnemucca, W-K.
 30714...Antelope Val. L. & S. Co., Yerington, Fd.
 30715...W. P. Butners, Yerington, Ford.
 30716...Roy Hoppie, Tecoma, Ford.
 30717...Fred Hoppie, Sr., Montello, Ford.
 30718...Wm. E. Edwards, Mason, Ford.
 30719...Wm. E. Edwards, Mason, Ford.
 30720...Nick Fryanovich, Mason, Saxon 6.
 30721...J. S. Fenley, Tonopah, Ford.
 30722...W. S. Timblin, Reno, Buick.
 30723...J. H. Graham, Tonopah, Ford.
 30724...F. G. Grube, Mina, Cadillac.
 30725...J. D. Cameron, Reno, Oakland.
 30726...Joe Galiot, Thompson, Adams.
 30727...Joe Galiot, Thompson, Pierce.
 30728...Joe Galiot, Thompson, Velle.
 30729...Joe Galiot, Thompson, Ford.
 30730...C. E. Taylor, Carson City, Little Giant.
 30731...John H. Kehoe, Reno, Chalmers.
 30732...John H. Kehoe, Reno, Oldsmobile.
 30733...N. S. LaPoint, Sparks, Studebaker.
 30734...Mrs. Geo. Herberth, Sparks, Studebaker.
 30735...Meffey & Park, Lovelock, Ford.
 30736...Meffey & Park, Lovelock, Ford.
 30737...J. H. Bible, Lovelock, Ford.
 30738...J. H. Bible, Lovelock, Studebaker.
 30739...Andrew Welsh, Lovelock, Ford.
 30740...Mori & Venturacci, Fallon, Ford.
 30741...Calivada Fertilizer Co., Lovelock, Chev.
 30742...C. Skinner, Winnemucca, Ford.
 30743...Joaquin A. Branchi, Bat. Mtn., Ford.
 30744...O. Kinneberg, Battle Mtn., Ford.
 30745...John Anderson, Lovelock, Reo 4.
 30746...P. H. Anderson, Lovelock, Ford.
 30747...Peter Gallagher, Wabaska, Buick.
 30748...Aug. H. Ahlborn, Fallon, Ford.
 30749...A. M. Bruce, Elko, Dodge.
 30750...Hankins & Gregory, Elko, Studebaker.
 30751...Hankins & Gregory, Elko, Kissell.
 30752...J. C. Smith, Fallon, Overland.
 30753...Verdi Lumber Co., Tonopah, Ford.
 30754...Joseph Doran, Jean, Ford.
 30755...Joe Green, Nixon, Chevrolet.
 30756...Western Meat Co., Reno, Buick.
 30757...W. A. Porch, Yerington, Ford.
 30758...M. D. Smith, Reno, Ford.
 30759...W. R. McCrea, Reno, Ford.
 30760...H. Wold, Reno, Ford.
 30761...A. J. Manhan, Reno, Ford.
 30762...J. W. Knowles, Reno, Ford.
 30763...Fritz Fricke, Gardnerville, Buick.
 30764...Palace Dry Goods, Reno, Ford.
 30765...H. S. Solares, Reno, Ford.
 30766...Lester Jurey, Battle Mtn., Ford.
 30767...Z. Dondero, Reno, Oakland.
 30768...M. D. Ferretta, Reno, Oakland.
 30769...Wm. K. Ballantine, Elko, Chevrolet.
 30770...Mark Walser, Reno, Lexington.
 30771...Fred Cerfoglio, Reno, Studebaker.
 30772...Chas. T. Williams, Hilltop, Ford.
 30773...James T. Knox, Sparks, Studebaker.
 30774...Mrs. V. Whitlock, Sparks, Overland.
 30775...City of Reno, Reno, Ford.
 30776...City of Reno, Reno, Ford.
 30777...City of Reno, Reno, Moreland truck.
 30778...City of Reno, Reno, Ford.
 30779...City of Reno, Reno, Ford.
 30780...Swift & Company, Reno, Ford.
 30781...P. A. McCarran, Reno, Overland.
 30782...O. M. Morley, Yermo, Cal., Ford.
 30783...B. Buscaglia, Goldfield, Maxwell.
 30784...E. H. Corbett, Goldfield, Ford.
 30785...Earl A. Sawyer, Ely, Ford.
 30786...M. H. Parks, Ely, Ford.
 30787...E. L. Winder, Fallon, Buick.
 30788...D. E. Anderson, Fallon, Ford.
 30789...D. E. Anderson, Fallon, Buick.
 30790...J. E. Couch, Fallon, Ford.
 30791...U. S. Reclamation Service, Fallon, Ford.
 30792...U. S. Reclamation Service, Fallon, Ford.
 30793...U. S. Reclamation Service, Fallon, Ford.
 30794...U. S. Reclamation Service, Fallon, Ford.
 30795...U. S. Reclamation Service, Fallon, Ford.
 30796...U. S. Reclamation Service, Fallon, Ford.
 30797...U. S. Reclamation Service, Fallon, Ford.
 30798...U. S. Reclamation Service, Fallon, Ford.
 30799...Agnes Compton, Yerington, Ford.
 30800...C. W. Ilgner, Reno, Buick.
 30801...J. W. Phillips, Verdi, Ford.
 30802...O. C. Newell, Smith, Ford.
 30803...W. E. Murphy, Wabaska, Dodge.
 30804...J. F. Winters, Mina, Cadillac.
 30805...A. E. Johnson, Mina, Ford.
 30806...G. K. Collins, Lida, Studebaker.
 30807...Wm. Oelkers, Minden, Buick.
 30808...E. R. Schlink, Reno, Oakland.
 30809...E. A. Settemeyer, Reno, Dodge.
 30810...H. J. Gosse, Reno, Kissell Kar.
 30811...H. J. Gosse, Reno, Fathfinder.
 30812...H. J. Gosse, Reno, Locomobile.
 30813...U. S. Reclamation Service, Fallon, Ford.
 30814...U. S. Rec. Service, Fallon, G.M.C.
 30815...U. S. Rec. Service, Fallon, Dodge.
 30816...U. S. Reclamation Service, Fallon, Ford.
 30817...U. S. Reclamation Service, Fallon, Ford.
 30818...U. S. Reclamation Service, Fallon, Ford.
 30819...U. S. Reclamation Service, Fallon, Ford.
 30820...U. S. Reclamation Service, Fallon, Ford.
 30821...E. Gilbert, Silver City, Ford.
 30822...Mrs. E. C. Haire, Yerington, Foru.
 30823...Harold S. Deane, Reno, Dodge.
 30824...Olympic Mines Co., Omco, Cadillac.
 30825...Gus Marble, Reno, Scripps-Booth.
 30826...Edmund Records, Reno, Dodge.
 30827...E. R. Sands, Reno, Ford.
 30828...Louis Rosasco, Reno, Chevrolet.
 30829...James Boland, Reno, Ford.
 30830...Benj. Barbash, Reno, Cadillac.
 30831...Joe Mozzetti, Reno, Buick.
 30832...L. H. Hanh, Francis, Ford.
 30833...Geo. Lehnert, Sparks, Ford.
 30834...A. J. O'Rourke, Reno, Dodge.
 30835...Leon Etchepare, Reno, Buick.
 30836...Jno. Larralde, Reno, Hudson.
 30837...J. P. Aldaz, Reno, Haynes.
 30838...C. O. Teberg, Sparks, Overland.
 30839...R. A. Carroll, Reno, Ford.
 30840...M. W. Malloy, Austin, Ford.
 30841...M. W. Malloy, Austin, Overland.
 30842...Benito Grite, Paradise, Reo.
 30843...J. Larribeda, Winnemucca, Oldsmobile.
 30844...Alfred M. Huebner, Eureka, Ford.
 30845...John Holmstrom, Lovelock, Dort.
 30846...Alfred Freitas, Stillwater, Chevrolet.
 30847...E. L. Stiff, Lovelock, Chevrolet.
 30848...Walter Busch, Lovelock, Ford.
 30849...Frank Miller, Lovelock, Ford.
 30850...R. A. McGuire, Lovelock, Reo.
 30851...F. Campbell, Lovelock, Reo.
 30852...E. H. Radtke, Oresana, Reo.
 30853...Geo. H. Gilbert, Oresana, Reo.
 30854...C. L. Rosengreen, Reno, Cadillac.
 30855...J. Humphrey, Reno, Hudson.
 30856...Dr. Mooser, Reno, Cadillac.
 30857...Reno Garage, Reno, Pope.

- 30858 R. C. Jensen, Reno, Ford.
 30859 Dr. Hood, Reno, Hudson.
 30860 R. C. Jensen, Reno, Dodge.
 30861 J. Humphrey, Reno, Hudson.
 30862 W. H. Williams, Fallon, Hudson.
 30863 J. A. Crotty, Lovelock, Dodge.
 30864 Chas. H. Cress, Fallon, Dodge.
 30865 L. C. Dorworth, Fallon, Elgin.
 30866 A. C. Thompson, Fallon, Dort.
 30867 Frank Arams, Stillwater, Oldsmobile.
 30868 Johnson & Clauson, Fallon, Chevrolet.
 30869 Joe Plachy, Fallon, Maxwell.
 30870 Cress & Dorworth, Fallon, Ford.
 30871 J. W. Hoffman, D.V.S., Fallon, Ford.
 30872 E. B. Loring, Fallon, Oldsmobile.
 30873 Lester C. Munk, Lovelock, Ford.
 30874 Geo. W. Hanna, Lee, Reo.
 30875 Geo. W. Hanna, Lee, Ford.
 30876 M. T. Starrett, Battle Mtn., Mitchell.
 30877 R. Devita, Lovelock, Reo.
 30878 Robert Hathaway, Rye Patch, Buick.
 30879 Ollie Day, Lovelock, Oldsmobile.
 30880 Boyd Ranch, Lovelock, Ford.
 30881 J. F. Vierra, Lovelock, Overland.
 30882 A. S. Thompson Co., Pioche, Ford.
 30883 A. S. Thompson Co., Pioche, Ford.
 30884 A. S. Thompson Co., Pioche, Ford.
 30885 A. E. Grinnell, Fallon, Chevrolet.
 30886 G. C. Howell, Fallon, Ford.
 30887 Con. Groene, Fallon, Dort.
 30888 C. H. Tuckett, Fallon, Ford.
 30889 Martin Strasden, Fallon, Ford.
 30890 Frank Tauer, Fallon, Dort.
 30891 E. B. Coffin, Reno, Buick.
 30892 Coffin & Larcombe, Reno, Ford.
 30893 Daniel Drewits, Reno, Hupmobile.
 30894 Chas. Stacy, Lovelock, Hupmobile.
 30895 Ole Hove, Fallon, Ford.
 30896 Garfield Surrah, Fallon, Ford.
 30897 C. J. Sutherland, Fallon, Chevrolet.
 30898 Dr. J. C. Ferrell, Wonder, Buick.
 30899 Prince Con. M. & S. Co., Pioche, Dodge.
 30900 John R. Cook, Pioche, Ford.
 30901 V. Saibini, Verdi, Overland.
 30902 J. J. Ward, Reno, Dodge.
 30903 H. J. Elliott, Minden, Ford.
 30904 L. L. Wattles, Eureka, Ford.
 30905 A. A. Tilman, Reno, Ford.
 30906 F. R. Barbour, Goodsprings, Buick.
 30907 Washoe County, Reno, Ford.
 30908 Washoe County, Reno, Ford.
 30909 Washoe County, Reno, Cadillac.
 30910 Mrs. D. W. Melarkey, Reno, Overland.
 30911 Joe Martini, Dayton, Ford.
 30912 Vic. Quillici, Dayton, Buick.
 30913 F. Montgomery, Lo. Rochester, Winton.
 30914 G. C. Barton, Carson City, Chevrolet.
 30915 Nev. Wonder M. Co., Wonder, Hupmobile.
 30916 Nev. Wonder M. Co., Wonder, Dorris.
 30917 C. W. Brooks, Reno, Reo.
 30918 Nev. Wonder M. Co., Reno, Reo.
 30919 Nev. Wonder M. Co., Reno, Brockway.
 30920 Nev. Wonder M. Co., Reno, Cadillac.
 30921 Nev. Wonder M. Co., Reno, Buick.
 30922 Nev. Wonder M. Co., Reno, Ford.
 30923 Nev. Wonder M. Co., Reno, Sears.
 30924 D. Saxalt, Yerington, Cadillac.
 30925 D. Oxyby, Yerington, Studebaker.
 30926 Allied L. & L. Co., Yerington, Oldsmo.
 30927 Allied L. & L. Co., Yerington, Ford.
 30928 Ira McFarland, Indian Springs, Ford.
 30929 T. Fukui, Carson City, Ford.
 30930 Thos. D. Hughes, Thompson, Hudson.
 30931 Edith L. St. Cyr, Ludwig, Ford.
 30932 W. T. Noonan, Mina, Buick 6.
 30933 J. W. Dunfee, Goldfield, Buick.
 30934 Thos. J. Lee, Goldfield, Ford.
 30935 Rev. Jos. Cunha, Yerington, Overland.
 30936 Con. Alexander, Yerington, Grant 6.
 30937 Louis Fabri, Yerington, Buick.
 30938 Tony Menegatt, Yerington, Ford.
 30939 Geo. B. Osborne, Mason, Ford.
 30940 S. P. Osborne, Mason, Dodge.
 30941 Berg Bros., Manhattan, Dodge.
 30942 Berg Bros., Manhattan, Packard.
 30943 Berg Bros., Manhattan, Ford.
 30944 Wm. Chambers, Tonopah, Ford.
 30945 John Sautucci, Manhattan, Overland.
 30946 O. Nannini, Manhattan, Pope-Hartford.
 30947 D. Puccinelli, Reno, Buick.
 30948 Thos. E. Horgan, Carson City, Ford.
 30949 C. C. Carpenter, Lovelock, Hudson.
 30950 H. N. Hornberger, Millers, Saxon 6.
 30951 Mrs. G. H. Marvin, Reno, Buick.
 30952 A. J. Boast, Sparks, Maxwell.
 30953 W. M. Clark, Reno, Ford.
 30954 Riverside Mill Co., Reno, Dodge.
 30955 Riverside Mill Co., Reno, Federal.
 30956 Riverside Mill Co., Reno, Ford.
 30957 Oscar H. Hammonds, Reno, Empire.
 30958 I. A. Spoon, Fallon, Overland.
 30959 Domingo Racatune, Elko, Hudson.
 30960 T. E. Ludwick, Lovelock, Ford.
 30961 J. A. Laue, Sparks, Dodge.
 30962 Geo. H. Anderson, Reno, Ford.
 30963 S. E. Allen, Fallon, Ford.
 30964 E. S. Berney, Fallon, Hollier.
 30965 S. K. Morrison, M.D., Reno, Hudson.
 30966 A. Pollock, Sparks, Oakland.
 30967 Louis Myer, Lovelock, Ford.
 30968 Leslie Evans, Lovelock, Ford.
 30969 Geo. A. Englebright, Fallon, Ford.
 30970 W. W. Sanford, Fallon, Oldsmobile.
 30971 Verdi Lumber Co., Fallon, Maxwell.
 30972 G. E. Richards, Fallon, Overland.
 30973 Gus W. Warmoth, Lovelock, Hupmobile.
 30974 Frank Vieira, Stillwater, Dodge.
 30975 Mike Kinney, Fallon, Ford.
 30976 Alex Smith, Searchlight, Ford.
 30977 A. Munzebrock, Goodsprings, Ford.
 30978 Nevada Valleys P. Co., Lovelock, Ford.
 30979 Nevada Valleys P. Co., Lovelock, Ford.
 30980 Nevada Valleys P. Co., Lovelock, Ford.
 30981 Nevada Valleys P. Co., Lovelock, Ford.
 30982 Nevada Valleys P. Co., Lovelock, Ford.
 30983 Nevada Valleys P. Co., Lovelock, Reo.
 30984 Nevada Valleys P. Co., Lovelock, Buick.
 30985 Nevada Valleys P. Co., Lovelock, Buick.
 30986 W. H. Orton, Lovelock, Buick.
 30987 R. N. McAllister, Lovelock, Ford.
 30988 H. E. Loufek, Lovelock, Pilot.
 30989 Ed. Von Tobel L. Co., Las Vegas, Ford.
 30990 Ed. Von Tobel, Las Vegas, Hudson.
 30991 John S. Park, Las Vegas, Detroit.
 30992 John Bottini, Reno, Reo.
 30993 William Kiernan, Reno, Ford.
 30994 W. B. Bridgman, Reno, Case.
 30995 Roland Snyder, Yerington, Dodge.
 30996 John Snyder, Yerington, Ford.
 30997 Central A. & M. Wks., Reno, Rambler.
 30998 Mrs. J. G. Kernek, Reno, Hudson.
 30999 Mrs. M. Scheeline, Reno, Overland.
 31000 Joe Stern, Carson City, Buick.
 31001 Electa J. Kramer, Lakeview, Buick.
 31002 Edward Clayton, Reno, Buick.
 31003 Mrs. C. Cardelli, Dayton, Overland.
 31004 Mattie Cameron, Reno, Ford.
 31005 Verdi Lumber Co., Verdi, Hudson.
 31006 Verdi Lumber Co., Verdi, Hudson.
 31007 Verdi L. Co., Verdi, Pope-Hartford.
 31008 D. J. Ostrosky, Thompson, Ford.
 31009 E. A. Dyer, Wabuka, Buick.
 31010 E. A. Dyer, Wabuka, Overland.
 31011 J. H. Farrell, Wabuka, Ford.
 31012 H. M. Pursel, Yerington, Buick.
 31013 Joseph Johns, Yerington, Ford.
 31014 Louis McMurdo, Reno, Ford.
 31015 Chas. A. Frost, Wellington, Ford.
 31016 Jack J. Jakowatz, Goldfield, Federal.
 31017 Jack J. Jakowatz, Goldfield, Ford.
 31018 Sam Homi, Goldfield, Maxwell.
 31019 C. M. Carter, Smith, Ford.
 31020 Guy Leach, Reno, Ford.
 31021 A. DeGrosellier, Yerington, Buick.
 31022 H. C. Clapp, Carson City, Cadillac.
 31023 Lee Wilkerson, Smith, Ford.
 31024 J. M. Heizer, Fallon, Ford.
 31025 Chas. Stoker, Lovelock, Overland.
 31026 James Constable, Reno, Ford.
 31027 Joseph H. Uren, Battle Mtn., Metz.
 31028 Thos. D. Rogers, Manhattan, Dodge.
 31029 C. B. Strosider, Yerington, Dodge.
 31030 E. F. Howard, Dayton, Cadillac.
 31031 W. W. Burns, Millers, Hupmobile.
 31032 Tonopah T. Co., Tonopah, Locomobile.
 31033 Tonopah T. Co., Tonopah, Little Giant.

31034. Tonopah T. Co., Tonopah, Hudson.
 31035. Tonopah T. Co., Tonopah, Hudson.
 31036. Tonopah T. Co., Tonopah, Pierce Ar.
 31037. Tonopah T. Co., Tonopah, Pierce Ar.
 31038. Antone Meriardo, Palisade, Ford.
 31039. Wes Johnson Co., Montello, Buick.
 31040. Wes Johnson Co., Montello, Ford.
 31041. M. Kishida, Montello, Ford.
 31042. M. W. Johnson, Montello, Ford.
 31043. Eugene C. Johnson, Montello, Ford.
 31044. E. Tretthewey, Austin, Chevrolet.
 31045. Matt Jauergui, Reno, Cadillac.
 31046. Matt Jauergui, Reno, Cadillac.
 31047. F. A. Gibson, Las Vegas, Ford.
 31048. J. C. Foster, Lovelock, Ford.
 31049. M. W. Burke, Lovelock, Overland.
 31050. Paul Kline, Reno, Reo.
 31051. J. W. Edwards, Reno, Reo.
 31052. John D. Ferris, Reno, Reo.
 31053. S. A. Gillespie, Reno, Cadillac.
 31054. H. Cornélison, Goodsprings, Ford.
 31055. U. J. Travis, Fallon, Ford.
 31056. J. W. Butcher, Reno, Reo.
 31057. H. H. Kennedy, Reno, Hudson.
 31058. W. Cann, Reno, Mitchell.
 31059. Mrs. I. R. Jewell, Reno, Buick.
 31060. W. M. Stevenson, Reno, Buick.
 31061. Jake Wainwright, Reno, Oakland.
 31062. C. Marklinger, Reno, Oldsmobile.
 31063. C. C. Jones, Reno, Chevrolet.
 31064. Geo. F. Ferris, Reno, Hupmobile.
 31065. R. Meaker, Reno, Ford.
 31066. Reinhart L. Co., Winnemucca, Dodge.
 31067. W. H. Menke, Reno, Buick.
 31068. Joe Saval, Battle Mtn., Reo.
 31069. Louis Lemaire, Battle Mtn., Ford.
 31070. Chas. Miller, Battle Mtn., Ford.
 31071. Louis A. Lemaire, Battle Mtn., Ford.
 31072. J. L. Durett, Battle Mtn., Ford.
 31073. George Banks, Elko, Franklin.
 31074. Fred Williams, Stillwater, Ford.
 31075. L. L. Chansok, Wonder, Ford.
 31076. C. W. Giger, Wonder, Ford.
 31077. Fallon S. & S. Co., Fallon, Ford.
 31078. Fallon S. & S. Co., Fallon, Ford.
 31079. W. A. Dexter, Fallon, Buick.
 31080. W. H. Green, Fallon, Ford.
 31081. J. W. Delmore, Ely, Oldsmobile.
 31082. Peoples Bros., Fernley, Dort.
 31083. C. A. Gelmshedt, Reno, Buick.
 31084. D. M. Shropshire, Battle Mtn., Ford.
 31085. W. B. Morrow, Las Vegas, Buick.
 31086. Nevada Transfer Co., Reno, Republic.
 31087. Nevada Transfer Co., Reno, Buick.
 31088. Nev. Transfer Co., Reno, Little Giant.
 31089. Nevada Transfer Co., Reno, Republic.
 31090. Natale Bareugo, Reno, Studebaker.
 31091. J. P. Schopper, Reno, Ford.
 31092. J. P. Schopper, Reno, Buick.
 31093. Jas. P. Byrnes, Fernley, Buick.
 31094. O. P. Nation, Pioche, Chevrolet.
 31095. Frank Morrison, Las Vegas, Overland.
 31096. Obie Harrell, Fallon, Ford.
 31097. Peter Dady, Reno, Mitchell.
 31098. D. M. York, Lovelock, Maxwell.
 31099. Rochester M. M. Co., Rochester, Ford.
 31100. H. Cohn, Carson City, Ford.
 31101. C. M. Damm, Lovelock, Dort.
 31102. Robert Puel, Goodsprings, Ford.
 31103. J. A. Cole, Reno, Franklin.
 31104. Nev. Packard Co., Lo. Rochester, Ford.
 31105. Nev. Packard Co., Lo. Rochester, Ford.
 31106. H. A. Agee, Wells, Cole 8.
 31107. John Flees, Columbia, Metz.
 31108. H. Holstrom, Verdi, Ford.
 31109. Frank Berger, Reno, Ford.
 31110. J. T. Bisagno, Reno, Ford.
 31111. B. Patrone, Verdi, Ford.
 31112. Walter Hansen, Reno, Ford.
 31113. R. B. Speers, Sparks, Hupmobile.
 31114. E. Canepa, Reno, Ford.
 31115. B. Ronero, Reno, Ford.
 31116. Robert E. Bowers, Reno, Ford.
 31117. Jas. M. Eur, Wonder, Ford.
 31118. C. E. Fulstone, Jacks Valley, Buick.
 31119. Steve Belli, Carson City, Maxwell.
 31120. W. F. Reading, Wellington, King.
 31121. A. G. Reading, Wellington, Hupmobile.
 31122. Harry K. Haines, Carson City, Dodge.
 31123. M. P. MacMillan, Reno, Ford.
 31124. Al. W. Bueter, Reno, Buick.
 31125. Ben Carano, Reno, Buick.
 31126. N. F. Bertrand, Yerington, Buick.
 31127. J. W. Gillan, Tonopah, Ford.
 31128. S. T. Kelso, Hawthorne, Overland.
 31129. W. S. Norris, Reno, Haynes.
 31130. Wall St. Copper Co., Luning, Buick.
 31131. Ed. Yerington, Carson City, Buick.
 31132. Earl W. Hart, Goldfield, Chalmers.
 31133. W. A. Ingalls, Goldfield, Ford.
 31134. John A. Dison, Yerington, Ford.
 31135. Chango & Aldax, Minden, Buick.
 31136. Guy M. Terry, Wellington, Buick.
 31137. A. C. Trifloff, Franktown, Buick.
 31138. J. J. Ferretto, Dayton, Oldsmobile.
 31139. A. Selmi, Ft. Churchill, Dodge.
 31140. D. I. Bohall, Carson City, Dodge.
 31141. Leo Bohall, Carson City, Maxwell.
 31142. W. G. Larimer, Reno, Ford.
 31143. Irvin A. Hanson, Lovelock, Ford.
 31144. Thomas Inglis, Fallon, Ford.
 31145. G. H. Givens, McGill, Ford.
 31146. A. S. Given, McGill, Ford.
 31147. G. E. Rice, Fallon, Buick.
 31148. W. W. Cook, M.D., Ely, Dodge.
 31149. Henry Hagar, Cave Creek, Dodge.
 31150. Morris Nelson, Lovelock, Ford.
 31151. Joe Johnson, Lovelock, Buick.
 31152. J. W. Kromer, Lovelock, Chevrolet.
 31153. Paulson Bros., Lovelock, Ford.
 31154. H. P. Kruse, Lovelock, Studebaker 4.
 31155. J. M. Orcio, Oreana, Chevrolet.
 31156. Chas. Johnson, Crescent, Ford.
 31157. James H. Down, Goodsprings, Ford.
 31158. Sarah Bell, Goodsprings, Ford.
 31159. R. H. Schaffer, Las Vegas, Ford.
 31160. W. W. Cogswell, Fernley, Ford.
 31161. Harry Dale, Las Vegas, Chevrolet.
 31162. W. E. Ferron, Las Vegas, Hupmobile.
 31163. C. A. Law, Las Vegas, Ford.
 31164. A. S. Henderson, Las Vegas, Buick.
 31165. Ferretto Bros., Steamboat, Mitchell.
 31166. Estate of Geo. A. Fayle, Jean, White.
 31167. S. H. Fort, Fallon, Ford.
 31168. L. M. Christensen, Sparks, Overland.
 31169. Barney Chicorp, Reno, Cadillac.
 31170. Nick Fillipelli, Reno, Hudson.
 31171. Mary Dickey, Sparks, Overland.
 31172. Conant Bros., Inc., Reno, Ford.
 31173. Conant Bros., Inc., Reno, Ford.
 31174. Nev. Eng. & Supply Co., Reno, Dodge.
 31175. J. C. Jones, Reno, Overland.
 31176. Walter Berry, Reno, Overland.
 31177. Walter Berry, Reno, Hupmobile.
 31178. LeRoy F. Pike, Reno, Crow, Elkhart.
 31179. B. A. Henry, Reno, Overland.
 31180. Albert J. Raymond, Pioche, Ford.
 31181. Chas. Wing, Caliente, Ford.
 31182. Chas. N. Castles, Hiko, Ford.
 31183. Chas. Catlin, Montello, Hudson.
 31184. Colman Rowse, Montello, Ford.
 31185. Wm. Loorz, Lovelock, Reo.
 31186. Wm. Loorz, Lovelock, Buick.
 31187. Wm. Loorz, Lovelock, Overland.
 31188. Mrs. H. Root, Reno, Oakland.
 31189. W. L. Brackett, Golconda, Willys-Six.
 31190. Jesse J. Beatty, Dayton, Ford.
 31191. Paul Jones, Mound House, Ford.
 31192. D. Winkleman, Genoa, Case.
 31193. Victor Swanson, Candelaria, Ford.
 31194. Mrs. Nora Clark, Reno, Maxwell.
 31195. R. E. Horschmann, Reno, Chevrolet.
 31196. J. E. Yenter, Tonopah, Dodge.
 31197. Mrs. Bessie Rawson, Yerington, Dodge.
 31198. Jno. Ehrman, Yerington, Reo.
 31199. James Wichman, Wichman, Ford.
 31200. C. A. Chapman, Ludwig, Willys-Knight.
 31201. F. R. Pierce, Manhattan, Ford.
 31202. L. Peterson, Goldfield, Ford.
 31203. Arthur H. Lawry, Goldfield, Chalmers.
 31204. A. C. Sayre, Smith, Dodge.
 31205. G. H. Plummer, Yerington, Dodge.
 31206. Mainonchi Bros., Yerington, Buick.
 31207. Bluestone M. & S. Co., Mason, Ford.
 31208. Bluestone M. & S. Co., Mason, Reo.
 31209. H. Rosenbrock, Gardnerville, Overland.

- 31210.....H. F. Heise L. Co., Gardnerville, Cad.
 31211.....Henry Stark, Gardnerville, Buick.
 31212.....H. G. Marsh, Minden, Buick.
 31213.....John B. Dangberg, Minden, Buick.
 31214.....John B. Dangberg, Minden, Buick.
 31215.....H. F. Dangberg, Minden, Cadillac.
 31216.....Minden Butter Co., Minden, Kleiber.
 31217.....H. B. Schwake, Gardnerville, Buick.
 31218.....Louis Valleen, Minden, Buick.
 31219.....George Zorn, Minden, Buick.
 31220.....H. A. Meder, Minden, Oldsmobile.
 31221.....C. Neddenreip, Gardnerville, Overland.
 31222.....Geo. F. Dangberg, Minden, Lexington.
 31223.....J. J. Brockliass, Gardnerville, Case.
 31224.....Chris. Christoffersen, Minden, Buick.
 31225.....Wm. Tholke, Gardnerville, Buick.
 31226.....Wm. Hussman, Gardnerville, Buick.
 31227.....Geo. Hussman, Gardnerville, Chalmers.
 31228.....Herman Bartel, Minden, Buick.
 31229.....John Hoffman, Gardnerville, Ford.
 31230.....Minden Butter Mfg. Co., Minden, Ford.
 31231.....H. F. Dangberg Co., Minden, Ford.
 31232.....H. F. Dangberg Co., Minden, Ford.
 31233.....H. F. Dangberg Co., Minden, Ford.
 31234.....H. W. F. Luhrs, Minden, Buick.
 31235.....H. F. Heise L. Co., Gardnerville, Ford.
 31236.....Arent Jensen Co., Gardnerville, Ford.
 31237.....H. A. Meder, Minden, Ford.
 31238.....W. G. Ritchford, Gardnerville, Buick.
 31239.....Wm. Dangberg, Minden, Monroe.
 31240.....C. F. W. Dangberg, Minden, Buick.
 31241.....Wm. Hussman, Gardnerville, Buick.
 31242.....Harry Johnson, Gardnerville, Ford.
 31243.....Fred Jepson, Minden, Ford.
 31244.....John Jepson, Minden, Ford.
 31245.....Minden Butter Mfg. Co., Minden, Buick.
 31246.....Reorganised Cracker Jack M. Co., Gold-
 field, Buick.
 31247.....Emmet D. Boyle, Carson City, Reo.
 31248.....Wm. Koerner, Imlay, Ford.
 31249.....Jasper Vail, Battle Mountain, Ford.
 31250.....J. A. Cardinal, Minden, Buick.
 31251.....Lester W. Hanson, Lovelock, Ford.
 31252.....Hans Westergard, Lovelock, Ford.
 31253.....Thos. Gandolfo, Fallon, Dort.
 31254.....J. H. Green, Jr., Lovelock, Ford.
 31255.....Mrs. C. T. C. Erickson, Lovelock, Ford.
 31256.....Jas. Romano, Palisade, Ford.
 31257.....W. Powell, Fallon, Chevrolet.
 31258.....Jack Dolf, Fallon, Chevrolet.
 31259.....Robert Nelson, Reno, Studebaker.
 31260.....A. E. Roush, Reno, Overland.
 31261.....Sadie Steinheimer, Reno, Studebaker.
 31262.....Alice J. Craven, Reno, Studebaker.
 31263.....J. P. Raine, Reno, Reo.
 31264.....Mrs. P. Kennedy, Fallon, Ford.
 31265.....S. C. Roberts, Stillwater, Ford.
 31266.....A. A. Towle, Fallon, Chevrolet.
 31267.....F. A. Gibrant, Pioche, Ford.
 31268.....L. A. Munk, Lovelock, Studebaker.
 31269.....Walter E. Hanson, Lovelock, Reo.
 31270.....L. S. Young, Lovelock, Oakland.
 31271.....Young-Goodin Co., Lovelock, Vim.
 31272.....W. H. Goodin, Lovelock, Reo.
 31273.....L. S. Young, Lovelock, Oldsmobile.
 31274.....St. John L. Taw, Lovelock, Chevrolet.
 31275.....C. B. Nance, Ruth, Hudson.
 31276.....F. Cochran, Austin, Buick.
 31277.....F. Cochran, Austin, Locomobile.
 31278.....Abe Sower, Austin, Saxon.
 31279.....J. H. Mackay, Thompson, Buick.
 31280.....W. S. Everett, Hazen, Chevrolet.
 31281.....J. C. Duryea, Reno, Reo.
 31282.....Western Meat Company, Fernley, Ford.
 31283.....F. W. McCulloch, Fernley, Oldsmobile.
 31284.....W. H. Laughlin, Reno, Buick.
 31285.....I. R. Mathews, Reno, Dodge.
 31286.....James Nelson, Reno, Chandler.
 31287.....W. H. Corbett, Reno, Buick.
 31288.....Arthur Fasani, Reno, Ford.
 31289.....O. C. Cox, Lovelock, Ford.
 31290.....Humphrey Supply Co., Reno, Ford.
 31291.....A. S. Nichols, Reno, Buick.
 31292.....E. L. Armstrong, Reno, Chevrolet.
 31293.....J. M. Rhodes, Reno, Reo.
 31294.....H. L. Nichols, Reno, Reo.
 31295.....Humphrey Supply Co., Reno, Reo.
 31296.....Humphrey Supply Co., Reno, Ford.
 31297.....Humphrey Supply Co., Reno, Ford.
 31298.....Humphrey Supply Co., Reno, Ford.
 31299.....Chas. N. Cheney, Sparks, Buick.
 31300.....W. S. Macpherson, Sparks, Hupmobile.
 31301.....W. S. Macpherson, Sparks, Ford.
 31302.....Bessie F. Austin, Sparks, Overland.
 31303.....Jesse Christensen, Fernley, Ford.
 31304.....T. E. Wilson, Lovelock, Reo.
 31305.....Bud Davis, Jean, Metz.
 31306.....Maurizio Pieretti, Tonkin, Studebaker.
 31307.....P. P. & B. Damele, Tonkin, Reo.
 31308.....Sarah Plummer, Palisade, Ford.
 31309.....S. F. Stollenwerck, Palisade, Ford.
 31310.....Eileen N. Morrison, Eureka, Dodge.
 31311.....Charley Ruden, Eureka, Ford.
 31312.....A. C. Lemaire, Battle Mtn., Pierce Ar.
 31313.....F. E. Walker, Verdi, Reo.
 31314.....Chas. Williams, Duckwater, Hupmobile.
 31315.....M. M. Riley, Las Vegas, Overland.
 31316.....Wm. Gutch, Fernley, Ford.
 31317.....U. Uchida, Reno, Ford.
 31318.....Union L. & C. Co., Reno, Ford.
 31319.....W. G. Francis, Austin, Ford.
 31320.....W. G. Francis, Austin, Dodge.
 31321.....W. G. Francis, Austin, Buick.
 31322.....Geo. Fickers, Battle Mountain, Ford.
 31323.....Joseph P. Giroux, Dyer, Packard.
 31324.....L. L. Wheeler, Reno, Ford.
 31325.....Frank S. Sandford, Sparks, Ford.
 31326.....Fred Prenschoff, Sparks, Reo.
 31327.....L. O. Chase, Battle Mountain, Dodge.
 31328.....Gerlach Livestock Co., Gerlach, Ford.
 31329.....Gerlach Livestock Co., Gerlach, Ford.
 31330.....Gerlach Livestock Co., Gerlach, Ford.
 31331.....L. D. Stuart, Fallon, Ford.
 31332.....J. C. Snyder, Yerington, Overland.
 31333.....J. C. Snyder, Yerington, Mitchell.
 31334.....Fred Panelli, Yerington, Buick.
 31335.....E. S. Mendive, Battle Mtn., Maxwell.
 31336.....C. H. Reinken, Lamolla, Dodge.
 31337.....F. O. Sterrett, Rochester, Ford.
 31338.....Wm. Reid, Las Vegas, Dodge.
 31339.....John Dekinder, Lovelock, Ford.
 31340.....Hugh L. Thomas, Winnemucca, Ford.
 31341.....J. M. Feeny, Wabaska, Ford.
 31342.....Frank J. Grand, Thompson, Ford.
 31343.....J. B. Sturlis, Wadsworth, Ford.
 31344.....Vienna Ceresola, Wadsworth, Ford.
 31345.....W. J. Ceresola, Wadsworth, Ford.
 31346.....M. P. Depauli, Wadsworth, Ford.
 31347.....N. B. Epperson, Sparks, Maxwell.
 31348.....W. Van Tossel, Sparks, Buick.
 31349.....R. B. Van Meter, Reno, Ford.
 31350.....M. Peterson, Reno, Ford.
 31351.....P. B. Smith, Reno, Ford.
 31352.....Smith & Peterson, Reno, Federal.
 31353.....F. E. Grant, Ruth, Hudson.
 31354.....W. S. Larsh, Ruth, Buick.
 31355.....A. S. Gaines, Searchlight, Stearns-Kt.
 31356.....Robert Stewart, Mina, Chevrolet.
 31357.....F. B. House, Hawthorne, Ford.
 31358.....C. M. Crowley, Searchlight, Ford.
 31359.....Mrs. T. M. Carroll, Goodsprings, Ford.
 31360.....F. M. Burner, Yerington, Dodge.
 31361.....J. J. Ferretta, Dayton, Cadillac.
 31362.....G. Teglia, Dayton, Buick.
 31363.....Leo Teglia, Dayton, Harnes.
 31364.....A. Ganni, Dayton, Ford.
 31365.....A. Quilici & Co., Carson City, Buick.
 31366.....L. Gentriv, Reno, Ford.
 31367.....Carson Hot Springs, Carson City, Ford.
 31368.....Carson Hot Springs, Carson City, Ford.
 31369.....G. W. Fisher, Carson City, Ford.
 31370.....U. S. Indian, Service, Reno, Ford.
 31371.....Edward Wagner, Mina, Ford.
 31372.....Jake Ruedy, Mina, Ford.
 31373.....V. E. Scott, Reno, Overland.
 31374.....W. W. Booth, Jr., Tonopah, Ford.
 31375.....A. J. Tedder, Mason, Cadillac.
 31376.....Henry Narel, Yerington, Chevrolet.
 31377.....E. Farny, Wabaska, Chevrolet.
 31378.....Elizabeth D. McKay, Yerington, Ford.
 31379.....G. A. Knox, M.D., Yerington, Overland.
 31380.....Nev.-Cal. P. Co., Tonopah, Little Giant.
 31381.....Nev.-Cal. P. Co., Goldfield, Ford.
 31382.....Nev.-Cal. P. Co., Goldfield, Ford.

- 31383....David Patterson, Dyer, Buick.
 31384....A. Patterson Co., Dyer, Pope-Hartford.
 31385....John Etchebarren, Reno, Cadillac.
 31386....John Etchebarren, Reno, Cadillac.
 31387....L. Mongolo, Sparks, Overland.
 31388....W. C. Boman, Parran-Hazen, Ford.
 31389....W. A. Pray, Fernley, Ford.
 31390....Mrs. G. W. Steiner, Sparks, Chevrolet.
 31391....Wm. Steiner, Sparks, Ford.
 31392....E. S. Farrington, Carson, Franklin.
 31393....O. A. Marvin, Sparks, Republic.
 31394....O. A. Marvin, Sparks, Ford.
 31395....O. A. Marvin, Sparks, Overland.
 31396....Dr. F. A. Harden, Fallon, Dort.
 31397....Dr. St. Clair, Reno, Lexington.
 31398....J. Elledge, Reno, Hudson.
 31399....W. E. Fuhrman, Reno, Ford.
 31400....T. L. Jones, Reno, Ford.
 31401....A. M. Smith, Reno, Ford.
 31402....Joe Litch, Lovelock, Buick.
 31403....Reno Press Brick Co., Reno, Ford.
 31404....Reno Press Brick Co., Reno, F.W.D.
 31405....H. L. DeHart, Reno, Overland.
 31406....C. E. Clough, Reno, Mitchell.
 31407....S. Mortensen, Verdi, Studebaker.
 31408....S. Mortensen, Verdi, Studebaker.
 31409....Wade Armstrong, Elko, Hudson.
 31410....E. J. Houghtaling, Lo. Rochester, Ford.
 31411....J. J. Hylton, Elko, Buick.
 31412....Dan Sabala, Elko, Hudson.
 31413....Edw. Henning, Lovelock, Metz.
 31414....O. T. Owens, Lovelock, Dodge.
 31415....Joe Silacci, Lovelock, Chevrolet.
 31416....S. E. Montgomery, Reno, Ford.
 31417....M. Mahan, Lovelock, Overland.
 31418....Mrs. Bina Johnson, Lovelock, Overland.
 31419....A. M. Anderson, Lovelock, Ford.
 31420....E. G. Norton, Fallon, Maxwell.
 31421....E. G. Norton, Fallon, Hollier.
 31422....Jack Kingston, Reno, Chevrolet.
 31423....Ira Carter, Reno, Ford.
 31424....E. S. Heward, Reno, Ford.
 31425....P. K. Robbeon, Reno, Buick.
 31426....W. Prince Catlin, Reno, Ford.
 31427....A. B. Gihliert, Reno, Oakland.
 31428....J. H. Melkesetian, Reno, Buick.
 31429....G. F. Ruediger, Reno, Dodge.
 31430....J. E. Peterson, Reno, Ford.
 31431....Emil Boffinger, Reno, Ford.
 31432....T. J. Bradshaw, Reno, Ford.
 31433....V. Dondero, Fallon, Chevrolet.
 31434....W. S. Yates, Palisade, Franklin.
 31435....Chas. P. Wilson, Battle Mtn., Ford.
 31436....Chas. Tibbs, Battle Mountain, Ford.
 31437....E. P. Walker, Rochester, Ford.
 31438....Verdi Lumber Co., Oreana, Maxwell.
 31439....Verdi Lumber Co., Oreana, Reno.
 31440....Verdi Lumber Co., Oreana, Duplex.
 31441....C. E. Gould, Oreana, Ford.
 31442....Ralph Matteucci, Hazen, Dodge.
 31443....E. L. Nuckols, North Fork, Dodge.
 31444....Robert W. Anderson, Deeth, Oldsmobile.
 31445....Alex Carden, Elko, Dodge.
 31446....Chas. Williams, Denio, Oreg., Saxon.
 31447....C. Williams, Denio, Oreg., Jeffery Quad.
 31448....Mrs. B. Klucny, Winnemucca, Ford.
 31449....E. H. Brown, Winnemucca, Ford.
 31450....J. B. Davis, Winnemucca, Ford.
 31451....J. C. Peterman, Winnemucca, Stude.
 31452....F. R. Sprague, McDermitt, Grant.
 31453....Purity Store Co., Winnemucca, Reno.
 31454....John Lamb, Goodsprings, Ford.
 31455....A. Mongolo, Fallon, Chevrolet.
 31456....Herman J. Degenar, Fallon, Ford.
 31457....J. S. Gray, Fallon, Ford.
 31458....Chas. Howser, Fallon, Ford.
 31459....F. D. Wolverton, Fallon, Ford.
 31460....Joseph Vickers, Las Vegas, Ford.
 31461....Copperside Mine, Goodsprings, Ford.
 31462....City of Lovelock, Lovelock, Ford.
 31463....James Roth, Fallon, Woods.
 31464....Quillie Bros., Dayton, Buick.
 31465....Will Blackwell, Simpson, Ford.
 31466....Will Blackwell, Simpson, Oldsmobile.
 31467....F. P. Steinbrook, Fallon, Ford.
 31468....J. C. Moore, Fallon, Dodge.
 31469....U. S. Indian Service, Reno, Oakland.
 31470....U. S. Indian Service, Reno, Ford.
 31471....Carlo Digina, Dayton, Haynes.
 31472....Joe Reffetto, Carson City, Buick.
 31473....A. J. Cliff, Carson City, Ford.
 31474....W. H. Leonard, Rawhide, Ford.
 31475....Theo. Schneider, Hudson, Maxwell.
 31476....Charlotte A. Milne, Thompson, Buick.
 31477....Gracian Landaburo, Yerington, Ford.
 31478....R. L. Foster, Goldfield, Buick.
 31479....R. L. Foster, Goldfield, Federal Truck.
 31480....R. L. Foster, Goldfield, Federal Truck.
 31481....Frankie Glomi, Yerington, Ford.
 31482....Fabri & Co., Inc., Yerington, Ford.
 31483....Fabri & Co., Inc., Yerington, Little G.
 31484....George Rice, Wabuska, Ford.
 31485....George Rice, Wabuska, Buick 6.
 31486....A. G. Buckley, Tonopah, Ford.
 31487....John Regis, Tonopah, Ford.
 31488....Miss Jesse Rawles, Tonopah, Ford.
 31489....National Ice Co., Tonopah, Federal.
 31490....P. E. Kline, Ludwig, Ford.
 31491....Nev.-Douglas C. C. Co., Ludwig, Ford.
 31492....G. A. Ashby, Hawthorne, Dodge.
 31493....Albert Kietzke, Reno, Buick.
 31494....Mrs. L. S. Mason, Reno, Studebaker.
 31495....Ed. Mollart, Artesia, Ford.
 31496....Ed. Mollart, Artesia, Chevrolet.
 31497....G. N. Fish, Yerington, Ford.
 31498....Mrs. J. S. Burkham, Hawthorne, Dodge.
 31499....Joe Schneider, Carson City, Reno.
 31500....Joe Schneider, Carson City, Ford.
 31501....Calavada Copper Co., Luning, Oakland.
 31502....Geo. Keough, Berlin, Franklin.
 31503....Chas. D. Keough, Berlin, Ford.
 31504....J. B. Giordano, Manhattan, Chevrolet.
 31505....Mrs. A. B. McKinley, Reno, Ford.
 31506....Mrs. Pearl Kistler, Sparks, Ford.
 31507....James Bart, Reno, Ford.
 31508....I. Heppie, Reno, Ford.
 31509....Wm. Penrose, Reno, Ford.
 31510....Chas. N. Knight, Reno, Ford.
 31511....Frank D. Hagar, Reno, Ford.
 31512....Joe Newman, Reno, Ford.
 31513....E. F. Jones, Reno, Ford.
 31514....H. A. Singleton, Sparks, Ford.
 31515....A. F. Price, Reno, Ford.
 31516....John Ambrose, Reno, Ford.
 31517....J. M. Lewis, Reno, Ford.
 31518....J. S. Elstner, Reno, Ford.
 31519....E. F. Lent, Reno, Ford.
 31520....J. W. Ferguson, Inlay, Ford.
 31521....Ed. Murry, Fallon, Ford.
 31522....Wm. Arthur, McGill, Ford.
 31523....C. H. Hancock, Fallon, Buick.
 31524....Paul Etcheberry, Fallon, Overland.
 31525....Sam Nelson, Reno, Ford.
 31526....J. Gilbert Lockridge, Sparks, Ford.
 31527....Lee Henderson, Reno, Ford.
 31528....S. Pierini, Carson City, Dodge.
 31529....Sam Frank, Reno, Buick.
 31530....J. C. Ballo, Reno, Ford.
 31531....Geo. E. Dieringer, Omco, Ford.
 31532....Philip Berazzo, Reno, Ford.
 31533....Lester C. Bell, Austin, Ford.
 31534....S. P. Grass, Fallon, Ford.
 31535....Booth B. Goodman, Lovelock, Oakland.
 31536....Hiram Stoker, Lovelock, Ford.
 31537....George Clark, Battle Mtn., Ford.
 31538....Andrew C. Dibble, Birch, Ford.
 31539....Geo. E. Cox, Birch, Ford.
 31540....G. E. Burton, Fallon, Overland.
 31541....Fanny Barkley, Fallon, Ford.
 31542....Roxby B. Thoma, Fallon, Dort.
 31543....Geo. W. Greiner, Reno, Ford.
 31544....Samuel Gibson, Fallon, Reno.
 31545....A. Mattucci, Fallon, Dort.
 31546....J. D. Madeline, Reno, Ford.
 31547....J. W. Farney, Reno, Ford.
 31548....Bob Jones, Reno, Ford.
 31549....S. B. Thornton, Fallon, Ford.
 31550....J. W. Danielson, Fallon, Ford.
 31551....R. A. Rickard, Reno, Metz.
 31552....Ernest A. Tucke, Reno, Ford.
 31553....Tait's Cash Market, Reno, Ford.
 31554....J. R. Tait, Reno, Ford.
 31555....Mrs. Ross C. Finley, East Ely, Ford.
 31556....George W. Laird, Eureka, Ford.

- 31557... Frank Romano, Sr., Eureka, W.-K.
 31558... Julius Huebner, Eureka, Oldsmobile.
 31559... Julius Huebner, Eureka, Ford.
 31560... F. J. Howard, Lovelock, Ford.
 31561... W. A. Wilson, Lovelock, Ford.
 31562... V. A. Twigg, Lovelock, Reo.
 31563... Leo Hogerton, Lovelock, Ford.
 31564... Frank Ranch & C. Co., Fallon, Ford.
 31565... Frank Ranch & C. Co., Fallon, Ford.
 31566... Frank Ranch & C. Co., Fallon, Ford.
 31567... Haines & Weathers, Elko, Dodge.
 31568... J. C. Harris, Elko, Hudson.
 31569... Cole L. Harwood, Reno, Winton 22 A.
 31570... Geo. D. Olson, Lovelock, Reo.
 31571... C. R. Cooper, Reno, Dodge.
 31572... Mrs. W. G. Smith, Reno, Ford.
 31573... P. E. Meehan, Sparks, Dodge.
 31574... Mrs. J. W. Robinson, Sparks, Ford.
 31575... S. E. Mohatt, Lovelock, Metz.
 31576... J. M. Hohatt, Lovelock, Chevrolet.
 31577... A. J. McDermott, Deeth, Ford.
 31578... Mrs. H. W. Fusa, Lovelock, Reo.
 31579... Frank H. Fusa, Lovelock, Ford.
 31580... Mildred Hill, Lovelock, Buick.
 31581... Henry Larson, Lovelock, Reo.
 31582... Geo. Kennedy, Lovelock, Dort.
 31583... C. A. Horn, DeLamar, Ford.
 31584... J. L. Haas, Reno, Reo.
 31585... Wm. Culverwell, Caliente, Ford.
 31586... John P. Wright, Hiko, Ford.
 31587... F. A. King Drug Co., Sparks, Ford.
 31588... Mrs. Louis Bianchini, Reno, Ford.
 31589... E. L. Ware, Reno, Ford.
 31590... R. W. Brooks, Sparks, Dodge.
 31591... Dr. S. T. Spann, Sparks, Hudson 6.
 31592... A. L. Howard, Reno, Studebaker.
 31593... J. A. Barngraver, Valmy, Ford.
 31594... Nick Borich, McGill, Oldsmobile.
 31595... J. A. Phifer, Lovelock, Chevrolet.
 31596... Dr. Robert Dill, Reno, Chevrolet.
 31597... Sam Monroe, Fallon, Ford.
 31598... T. S. Farretta, Reno, Pilot.
 31599... Frank Robinson, Ft. Churchill, Ford.
 31600... J. S. Gaston, Reno, Ford.
 31601... W. H. Simmons, Reno, Cadillac.
 31602... Reno Grocer Co., Reno, Kleiber.
 31603... Reno Grocer Co., Reno, Republic.
 31604... R. P. Arnold, Ely, Ford.
 31605... R. P. Arnold, Ely, Studebaker.
 31606... R. P. Arnold, Ely, Studebaker.
 31607... R. P. Arnold, Ely, Studebaker.
 31608... Reno Grocer Co., Reno, Dodge.
 31609... Reorganized Booth, Goldfield, Buick.
 31610... Joe Allard, Wellington, Ford.
 31611... L. P. Jacobsen, Gardnerville, Dodge.
 31612... George H. Fay, Sheridan, Ford.
 31613... C. A. Starr, Reno, Ford.
 31614... Al. Lund, Reno, Ford.
 31615... H. C. Masters, Reno, Ford.
 31616... Dr. C. E. McCafferty, Fallon, Ford.
 31617... John Deere Plow Co., Reno, Chevrolet.
 31618... H. C. Lampe, Gardnerville, Case.
 31619... Matt Penrose, Yerington, Buick.
 31620... Frank Stupke, Carson City, Overland.
 31621... A. Grant Walls, Reno, Ford.
 31622... J. W. Hogan—L. Muran, Reno, Dodge.
 31623... H. Lewers, Reno, Overland.
 31624... Frank E. Martin, Yerington, Ford.
 31625... Paul Nikolaus, Wabuska, Stevens.
 31626... B. G. Yam, Gardnerville, Chandler.
 31627... Frank Settlemeyer, Genoa, Ford.
 31628... B. M. Clay, Luning, Ford.
 31629... H. A. Sinnott, Candelaria, Ford.
 31630... Adams & Miller, Mina, Ford.
 31631... Mrs. Frank Kiertzke, Reveille, Ford.
 31632... C. L. Montrose, Tonopah, Hupmobile.
 31633... Dominik Kovocevic, Tonopah, Ford.
 31634... George Harris, Virginia City, Ford.
 31635... Mrs. W. Douglass, Virginia City, Paige.
 31636... Marj A. Page, Keystone, Ford.
 31637... S. R. Moore, Tonopah, Dodge.
 31638... Thos. Lindsay, Tonopah, Chevrolet.
 31639... Amos Fabri, Yerington, Buick.
 31640... A. E. Reynolds, Thompson, Ford.
 31641... C. R. Edison, Mason, Maxwell.
 31642... Mrs. Etta Wade, Wabuska, Ford.
 31643... Chas. Thrailkill, Yerington, Ford.
 31644... Silver Pick Con. M. Co., Goldfield, Ford.
 31645... Jumbo Ex. Mfg. Co., Goldfield, White.
 31646... East Divide Mfg. Co., Goldfield, Ford.
 31647... Goldfield Great Bend M. Co., Chandler.
 31648... Grandama Con. M. Co., Goldfield, Chand.
 31649... Bollettino Del Nevada, Reno, Buick.
 31650... Adele Domenici, Reno, Ford.
 31651... John Casci, Reno, Maxwell.
 31652... Frank Simpson, Simpson, Buick.
 31653... Frank Simpson, Simpson, Dodge.
 31654... E. R. Tidd, Smith, Ford.
 31655... Fred Ohl, Washoe, Ford.
 31656... J. L. Neill, McGill, Ford.
 31657... C. G. Smith, Winnemucca, Ford.
 31658... A. E. Kent & Co., Golconda, Ford.
 31659... W. M. DeLong, Sulphur, Ford.
 31660... Y. Arascada, Golconda, Haynes.
 31661... P. E. Connelly, Winnemucca, Dodge.
 31662... A. E. Kent & Co., Golconda, Mitchell.
 31663... J. H. Gallagher, Ely, Dodge.
 31664... J. H. Gallagher, Ely, Denby.
 31665... Ed. Millard & Son, Ely, Hudson.
 31666... Ed. Millard & Son, Ely, Franklin.
 31667... J. F. Hesse, Las Vegas, Studebaker.
 31668... Arnold & Clinton, Las Vegas, Stude.
 31669... H. & Devlin, Pioche, Ford.
 31670... G. F. McCurdy, Tippet, Studebaker.
 31671... D. B. Leyson, McGill, National.
 31672... V. M. Henderson, McGill, Overland.
 31673... John R. Eustace, Sparks, Oldsmobile.
 31674... Mrs. J. M. Wonderlay, Reno, Ford.
 31675... W. I. Mitchell Co., Reno, Ford.
 31676... T. B. Laurie, Reno, Ford.
 31677... Fred Newmarker, Reno, Ford.
 31678... J. O. Sessions, Reno, Ford.
 31679... R. S. Peterson, Reno, Ford.
 31680... I. E. Cook, Reno, Reo.
 31681... Bert Marker, Lovelock, Ford.
 31682... Ed. Vance, Oreana, Buick.
 31683... Carl Lehnert, Imlay, Buick.
 31684... D. T. Duncan, Jean, Ford.
 31685... D. T. Duncan, Jean, Buick.
 31686... Mrs. Musa Anderson, Clark, Ford.
 31687... H. B. Snyder, Goodsprings, Metz.
 31688... W. E. Smith, Pioche, Ford.
 31689... Geo. W. Rose, Goodsprings, Cadillac.
 31690... S. D. Conwell, Las Vegas, Ford.
 31691... Nelson Baker, Pioche, Ford.
 31692... Nev. Lime & R. Co., Las Vegas, Ford.
 31693... Nev. Lime & R. Co., Las Vegas, Ford.
 31694... Churchill Creamery, Inc., Fallon, Ford.
 31695... Mrs. M. Marker, Lovelock, Baker Elec.
 31696... Lovelock Woolsey L. & P. Co., Cadillac.
 31697... J. K. Henderson, Wonder, Ford.
 31698... Frank L. Miller, Goodsprings, Buick.
 31699... Dr. A. C. Olmsted, Wells, Ford.
 31700... Mrs. E. W. Blair, Tonopah, Overland.
 31701... E. P. Quinn, Reno, Buick.
 31702... Arthur L. Marks, Reno, Ford.
 31703... Burr Stewart, Elko, Ford.
 31704... Burr Stewart, Elko, Franklin.
 31705... George L. Keading, Battle Mtn., Ford.
 31706... Herman Rutler, Sparks, Chevrolet.
 31707... J. J. Walsh, Fallon, Overland.
 31708... Geo. C. Kirkpatrick, Fallon, Chevrolet.
 31709... S. D. Flake, Fallon, Maxwell.
 31710... Starr W. Hill, Lovelock, Ford.
 31711... J. H. Miller, Fallon, Overland.
 31712... C. E. Andrews, Fallon, Ford.
 31713... W. L. Nygren, Fallon, Chevrolet.
 31714... George H. Dobbs, Hasen, Overland.
 31715... A. P. Lauritzen, Fernley, Chevrolet.
 31716... A. L. Baker, Fallon, Overland.
 31717... Chas. M. Powell, Fallon, Ford.
 31718... W. A. Simmonds, Fallon, Overland.
 31719... E. C. Smith, Fallon, Chevrolet.
 31720... Meister Bros., Fallon, Ford.
 31721... A. E. Buys, Goodsprings, Ford.
 31722... M. Jorgenson, Goodsprings, Ford.
 31723... C. Walter Fries, Las Vegas, Ford.
 31724... B. R. Jefferson, Las Vegas, Ford.
 31725... W. Swift, Fallon, Chevrolet.
 31726... R. L. Douglass, Fallon, Hudson.
 31727... R. L. Douglass, Fallon, Stutz.
 31728... E. Dondero, Fallon, Ford.
 31729... Mrs. A. G. Ingalls, Wadsworth, Ford.

- 31780....C. E. Ingalls, Wadsworth, Maxwell.
 31781....Louis Garvanta, Wadsworth, Ford.
 31782....Fred Wilson, Wadsworth, Buick.
 31783....Felix Mariano, Wadsworth, Maxwell.
 31784....E. M. Pierson, Wadsworth, Ford.
 31786....Magnus Carlson, Fallon, Ford.
 31786....W. T. McVay, Reno, Oldsmobile.
 31787....S. C. Bigelow, Carson City, Oldsmobile.
 31788....R. J. Pierson, Lovelock, Buick.
 31789....Esmeralda W. & M. Co., Candelaria, Fd.
 31740....Dan Muldoon, Carson City, Overland.
 31741....James Atcheson, Sweetwater, Buick.
 31742....M. H. Roach, Sweetwater, Ford.
 31743....J. F. Frederick, Sweetwater, Reo.
 31744....J. F. Frederick, Sweetwater, Ford.
 31745....P. J. Conway, Sweetwater, Dodge.
 31746....Pete Pierini, Dayton, Mitchell.
 31747....W. G. Larue, Yerington, Ford.
 31748....W. M. Penrose, Wabaska, Ford.
 31749....W. M. Penrose, Wabaska, Ford.
 31750....Alfred DuBois, Yerington, Chevrolet.
 31751....Joe Yama, Wabaska, Dodge.
 31752....A. M. Manha, Yerington, Ford.
 31753....Amos Santini, Wichman, Ford.
 31754....Jessen Brothers, Simpson, Ford.
 31755....Mina Mercantile Co., Mina, Ford.
 31756....M. Quillic, Dayton, Ford.
 31757....M. Quillic & Son, Dayton, Ford.
 31758....R. G. Williams, Tonopah, Oakland.
 31759....Wallace Macgregor, Tonopah, Buick.
 31760....F. M. North, Manhattan, Chevrolet.
 31761....Ellsworth Herrick, Reno, Ford.
 31762....H. A. Fordyce, Reno, Dodge.
 31763....Dr. R. P. Chandler, Reno, Oakland.
 31764....Mrs. Alice Miller, Reno, Ford.
 31765....A. H. Thies, Yerington, Chandler.
 31766....L. C. Butterfield, Reno, Ford.
 31767....John Jordan, Goldfield, Ford.
 31768....Alice McAndrews, Reno, Saxon.
 31769....Peysor & Eckhoff, Reno, Ford.
 31770....H. W. Hill, Reno, Chandler.
 31771....Oscar C. Scott, Searchlight, Dodge.
 31772....Henry A. Williams, Yerington, Reo.
 31773....John Harvey, Goldfield, Ford.
 31774....J. B. Williams, Rhyolite, Ford.
 31775....J. B. Williams, Rhyolite, Ford.
 31776....St. John Laborde, Austin, Dodge.
 31777....Neilson Bros., Tonopah, Hup.
 31778....Reno Meat Co., Reno, Ford.
 31779....Virginia Market, Reno, Ford.
 31780....Wm. E. Kruger, Reno, Willys-Knight.
 31781....John H. Hauschild, Reno, Overland.
 31782....Ben Raggio, Reno, Buick.
 31783....J. Rosasco, Reno, Buick.
 31784....E. R. Albee, Wadsworth, Studebaker.
 31785....C. A. Jones, Fallon, Chalmers.
 31786....Wayne Young, Fallon, Ford.
 31787....Albert N. Stevens, Fallon, Ford.
 31788....A. G. Willard, Fallon, Maxwell.
 31789....I. E. Wells, Fallon, Ford.
 31790....W. M. Gibson, Battle Mountain, Ford.
 31791....Joe Miller, Battle Mountain, Ford.
 31792....E. F. Kundson, Golconda, Overland.
 31793....B. H. Ritts, Golconda, Buick.
 31794....Garfield Force, Mill City, Ford.
 31795....J. E. Hollingsworth, Packard, Ford.
 31796....D. L. Carpenter, Lovelock, Ford.
 31797....John Dotta, Lovelock, Reo 4.
 31798....A. Loose, Lovelock, Duplex.
 31799....A. Loose, Lovelock, Duplex.
 31800....Fred J. Hess, Austin, Ford.
 31801....Paul Peritti, Dayton, Ford.
 31802....French Dyers, Cleaners, Reno, Ford.
 31803....Jack Petre, Reno, Oakland.
 31804....John Gandic, Reno, Oakland.
 31805....Robert Linville, Wonder, Buick.
 31806....Dr. J. A. Russell, Lovelock, Overland.
 31807....Martin Cash Grocery, Reno, Ford.
 31808....Chas. H. Conerty, Sparks, Ford.
 31809....Oscar Wickberg, McGill, Ford.
 31810....O. W. LeMay, Fernley, Ford.
 31811....D. J. Shea, Austin, Ford.
 31812....D. J. Shea, Austin, Dodge.
 31813....Mrs. Mabel Smith, Sparks, Buick.
 31814....J. A. Ascher, Sparks, Hudson.
 31815....George Eddy, Sparks, Studebaker.
 31816....Domanick Chicago, Sparks, Cadillac.
 31817....Bert N. Weldon, Reno, Hupmobile.
 31818....John Blair, Eureka, Ford.
 31819....F. Avilla, Reno, Ford.
 31820....C. D. Campbell, Reno, Mitchell.
 31821....Jas. N. Hollinger, Uraine, Ford.
 31822....Wm. Jurgens, Pioche, Ford.
 31823....W. H. Moffat, Reno, Packard.
 31824....W. H. Moffat, Reno, Packard.
 31825....W. H. Moffat, Reno, Cadillac.
 31826....John Joyner, Jean, Ford.
 31827....Troy S. L. & C. Wks., Las Vegas, Ford.
 31828....Troy S. L. & C. Wks., Las Vegas, Moreland.
 31829....Fred R. Bannard, Ely, Maxwell.
 31830....Fred R. Bannard, Ely, Republic.
 31831....C. E. Graves, Reno, Maxwell.
 31832....H. Moffat Co., Lovelock, Ford.
 31833....John Helmsoth, Genoa, Ford.
 31834....Charlie Sam, Virginia City, Ford.
 31835....Ferdinand Beck, Virginia City, Dodge.
 31836....F. Hodgins, M.D., Virginia City, Chev.
 31837....A. G. Meyers, Carson City, Ford.
 31838....A. G. Meyers, Carson City, Ford.
 31839....Andrew Todd, Carson City, Ford.
 31840....Neil McLeod, Yerington, Dodge.
 31841....W. C. Dodge, Ely, Maxwell.
 31842....Deil Mathews, Kimberly, Studebaker.
 31843....J. C. Collins, Ely, Maxwell.
 31844....R. T. Nichols, East Ely, Packard.
 31845....R. T. Nichols, East Ely, Packard.
 31846....R. T. Nichols, East Ely, Packard.
 31847....R. T. Nichols, East Ely, Packard.
 31848....R. T. Nichols, East Ely, Packard.
 31849....J. H. Barnes, Kimberly, Paige.
 31850....R. T. Nichols, East Ely, Packard.
 31851....F. D. Stunden, East Ely, Ford.
 31852....M. A. Townsend, Ruth, Oakland.
 31853....C. F. Rose, Ruth, Buick.
 31854....J. E. Musick, Ruth, Saxon.
 31855....Roy Musgoe, Ely, Ford.
 31856....J. A. McMannis, Reno, Reo.
 31857....Frank Dalton, Reno, Oakland.
 31858....T. S. Davis, Goldfield, Buick.
 31859....Chas. Kenefake, Mina, Ford.
 31860....J. H. Noone, Luning, Dodge.
 31861....D. Welge, Yerington, Chevrolet.
 31862....Pete Borda, Gardnerville, Cadillac.
 31863....G. G. Russell, Gardnerville, Ford.
 31864....John Blazge, Sheridan, Ford.
 31865....Fred Klotz, Minden, Chevrolet.
 31866....R. E. Howard, Gardnerville, Overland.
 31867....C. F. Rickey, Minden, Ford.
 31868....Herman Springmeyer, Minden, Buick.
 31869....Wm. Than, Minden, Ford.
 31870....Wm. Swail, Minden, Ford.
 31871....Henry Goedecke, Minden, Ford.
 31872....Oliver Haugener, Gardnerville, Ford.
 31873....John Etchemendy, Gardnerville, Dodge.
 31874....Henry Goedecke, Minden, Buick.
 31875....C. W. Jacobsen, Gardnerville, Dodge.
 31876....D. L. Jones, Gardnerville, Chevrolet.
 31877....George Heitman, Gardnerville, Dodge.
 31878....R. M. Compton, Tonopah, Overland.
 31879....J. F. Darrough, Round Mtn., Cadillac.
 31880....George Willott, Wellington, Ford.
 31881....W. H. Berg, Round Mountain, Ford.
 31882....W. H. Berg, Round Mountain, Ford.
 31883....D. W. McKenzie, Yerington, Hup.
 31884....Ed. Tanner, Yerington, Hupmobile.
 31885....J. C. Gallagher, Yerington, Ford.
 31886....N. H. Van Alstine, Yerington, Hup.
 31887....F. E. Schultz, Goldfield, Ford.
 31888....A. I. D'Arcy, Goldfield, Cadillac.
 31889....E. Barcos, Reno, Buick.
 31890....B. Selkirk, Gardnerville, Overland.
 31891....F. W. Cook, Genoa, Overland.
 31892....H. E. Heidenreich, Franktown, Cha.
 31893....L. A. Sauer, Franktown, Cole 8.
 31894....W. E. Gould, Reno, Studebaker.
 31895....R. W. Varnon, Reno, Reo 5.
 31896....B. A. Jacobi, Reno, Oakland.
 31897....J. S. Houtz, Reno, Hupmobile.
 31898....M. Gardella, Reno, Ford.
 31899....F. M. Williams, Reno, Overland.
 31900....J. T. Bell, Sparks, Grant 6.
 31901....Ernest Schroeder, Sparks, Overland.
 31902....F. L. Seymour, Sparks, Chalmers.
 31903....A. F. Scanavino, Reno, Acme.

- 31904...A. F. Scanavino, Reno, Ford.
 31905...Mrs. C. Sprague, Carson City, Cadillac.
 31906...A. F. Scanavino, Reno, Pilot.
 31907...H. M. Hilborn, Reno, Oldsmobile.
 31908...Mrs. Lema Allen, Reno, Ford.
 31909...Nev. Sierra Baptist Conv., Reno, Ford.
 31910...J. E. Martin, Reno, Hudson.
 31911...J. A. Swanson, Verdi, Chevrolet.
 31912...Fete Etchecopar, Gerlach, Haynes.
 31913...C. H. Barber, Lovelock, Ford.
 31914...Mrs. Ed. Cunningham, Lovelock, Buick.
 31915...J. A. Gomes, Golconda, Ford.
 31916...John Etchard, Golconda, Dodge.
 31917...Albert Gremes, Virginia City, Ford.
 31918...Samoville & Flaggs, Inc., Reno, Maxwell.
 31919...L. D. Prince, Reno, Buick.
 31920...Herbert E. Colby, M.D., Ely, Maxwell.
 31921...Graham Quality Shop, Ely, Ford.
 31922...J. E. Murphy, Wells, Buick.
 31923...S. M. Davis, Deeth, Ford.
 31924...E. Reinhart Co., Golconda, Ford.
 31925...T. B. Curley, Golconda, Ford.
 31926...Julius Redelius, Reno, Ford.
 31927...Andrew Nelson, Reno, Studebaker.
 31928...R. J. Mathews, Panaca, Ford.
 31929...Oliver J. Gillispie, Pioche, Ford.
 31930...Elmer Middleton, Pioche, Ford.
 31931...Geo. L. Dorothy, Pioche, Dodge.
 31932...Wiseman Ranch, Wells, Dodge.
 31933...J. Davis Weeks, Wells, Buick.
 31934...Harry Paynter, Lovelock, Studebaker.
 31935...N. M. Kerr, Wadsworth, Ford.
 31936...H. A. Shellard, Fallon, Oakland.
 31937...Marie Woodson, Fallon, Dodge.
 31938...William Dressler, Fallon, Overland.
 31939...Chas. E. Towle, Fallon, Oldsmobile.
 31940...T. A. McNeil, Wonder, Dodge.
 31941...J. Ashbaugh, Goodsprings, Oldsmobile.
 31942...J. A. Egger, Goodsprings, Ford.
 31943...Est. of G. A. Fayle, Goodsprings, Hud.
 31944...Est. of G. A. Fayle, Goodsprings, Buick.
 31945...Est. of G. A. Fayle, Goodsprings, Ford.
 31946...Wood Curtis Co., Elko, Ford.
 31947...Gregory Moriani, Derby, Maxwell.
 31948...S. B. Pray, Fernley, Dodge.
 31949...P. T. Anderson, Fernley, Ford.
 31950...Thomas H. May, Hazen, Overland.
 31951...A. E. Luke, Fallon, Hudson.
 31952...F. J. Shair, Reno, Buick.
 31953...Joe Beebe, Reno, Dodge.
 31954...J. E. Long, McGill, Dodge.
 31955...Mike Delich, Ely, Falge.
 31956...D. P. Bartley, Ely, Franklin.
 31957...M. D. Rice, Ely, Ford.
 31958...Fred R. Allen, Ely, Ford.
 31959...L. T. Brock, Ely, Ford.
 31960...Hugh Wilson, Ely, Ford.
 31961...W. C. Morey, McGill, Ford.
 31962...Leroy Taylor, Hudson, Ford.
 31963...Ed. Bennett, McGill, Ford.
 31964...J. E. Brewer, McGill, Ford.
 31965...Antonio Bevilacqua, Reno, Ford.
 31966...Andrew Christensen, Genoa, Ford.
 31967...S. Cliff & Sons, Franktown, Overland.
 31968...R. W. Thorne, Minden, Buick.
 31969...Hobart Estate Co., Carson, Cadillac.
 31970...Hobart Estate Co., Minden, Service.
 31971...E. A. Dillon, Yerington, Ford.
 31972...W. T. McAllister, Reno, Stearns-Kt.
 31973...G. E. Raycraft, Gardnerville, Dodge.
 31974...B. H. Kling, McGill, Ford.
 31975...Rochester Mines Co., Lovelock, Winton.
 31976...C. W. Brooks, Reno, Ford.
 31977...C. W. Brooks, Reno, Studebaker.
 31978...Albert Kelly, Tonopah, Ford.
 31979...R. W. McVicar, Smith, Chevrolet.
 31980...D. Gletaylor, Reno, Buick.
 31981...Jas. Hansen, Reno, Ford.
 31982...Lincoln Manning, Reno, Ford.
 31983...J. Thompson, Searchlight, Oldsmobile.
 31984...A. M. Keefer, Reno, Ford.
 31985...A. M. Keefer, Reno, Ford.
 31986...A. M. Keefer, Reno, Ford.
 31987...E. F. Mayfield, Tonopah, Ford.
 31988...Gus Wallberg, Tonopah, Ford.
 31989...E. S. Masters, Tonopah, Studebaker.
 31990...E. S. Masters, Tonopah, Ford.
 31991...Lawrence Christensen, Tonopah, Ford.
 31992...R. L. Robinson, Reno, Buick.
 31993...J. M. Gilfoyle, Tonopah, Buick.
 31994...Carl Fuetach, Tonopah, Hupmobile.
 31995...Blanche Preston, Reno, Dodge.
 31996...Chas. D. Smith, Thompson, Studebaker.
 31997...E. W. Lehmann, Ludwig, Maxwell.
 31998...Jake Sikora, Mason, Ford.
 31999...Joe Chebotarewicz, Mason, Overland.
 32000...Edwin C. Miller, Carson City, Buick.
 32001...A. R. Swart, Carson City, Overland.
 32002...O. Gerkig, Hawthorne, Chevrolet.
 32003...A. Bennett, Fallon, Ford.
 32004...M. Galantnolini, Yerington, Buick.
 32005...J. Y. Anderson, Mina, Ford.
 32006...Robert Martin, Goldfield, Dodge.
 32007...I. C. Likens, Mina, Ford.
 32008...U. S. Reclamation Service, Fallon, Ford.
 32009...U. S. Reclamation Service, Fallon, Ford.
 32010...Richard Kirman, Reno, Cadillac.
 32011...J. R. Bradley Co., Inc., Reno, Buick.
 32012...J. R. Bradley Co., Inc., Reno, Ford.
 32013...J. R. Bradley Co., Inc., Reno, Ford.
 32014...Con. Copper M. Co., Kimberly, Cadillac.
 32015...Louis Stodick, Gardnerville, Buick.
 32016...J. N. Bryan, Stillwater, Maxwell.
 32017...M. Elorgy Co., Eureka, Studebaker 6.
 32018...Gastor Uhalde, Eureka, Studebaker 6.
 32019...Chas. Minioletti, Hamilton, Dorris.
 32020...D. Meriluch, Eureka, Hudson Super 6.
 32021...J. Yraquin, Strawberry, Hud. Super 6.
 32022...Alex Heguy Co., Hylton, Chalmers 6.
 32023...Louie Ock, Eureka, Ford.
 32024...Manuel Aquirre, Eureka, Ford.
 32025...Ulmont Pastorino, Eureka, Ford.
 32026...M. Legarro, Eureka, Hudson Super 6.
 32027...Ulmont Pastorino, Eureka, Ford.
 32028...Martin Etchemendy, Eureka, Dodge.
 32029...Bert Acree, Austin, Overland.
 32030...Mrs. I. A. Horkwick, Reno, Dodge.
 32031...S. R. Dons, Fallon, Buick.
 32032...A. L. Bachrodt and Pitt Mill and Elevator Co., Lovelock, Pilot.
 32033...Chas. H. Tucker, Fallon, Ford.
 32034...C. J. Buerer, Fallon, Chevrolet.
 32035...Harry Sibley, Fallon, Chevrolet.
 32036...E. J. Robinson, Fallon, Overland.
 32037...T. H. Depp, Fallon, Dort.
 32038...L. L. Leonard, Fallon, Ford.
 32039...T. J. Petres, Fallon, Overland.
 32040...T. S. Story, Sparks, Dodge.
 32041...Sarah Chase, Reno, Studebaker.
 32042...O. Somner, Reno, Studebaker.
 32043...R. R. Gamble, Hazen, Ford.
 32044...C. M. Beeghly, Fallon, Ford.
 32045...W. S. Palmer, Reno, Studebaker.
 32046...J. A. Lynn, Currant, Ford.
 32047...Walter Debbs, Battle Mtn., Overland.
 32048...J. F. Walsh, Austin, Hudson.
 32049...M. J. Herr, Las Vegas, Dodge.
 32050...John G. Taylor, Lovelock, Ford.
 32051...L. L. Burt, Caliente, Ford.
 32052...Mrs. Frank Eisenmann, Pioche, Ford.
 32053...P. M. Housman, Pioche, Ford.
 32054...Catlin Shale Products Co., Elko, Ford.
 32055...Catlin Shale Prod. Co., Elko, Overland.
 32056...Dr. R. W. Martin, Las Vegas, Stephens.
 32057...Dr. R. W. Martin, Las Vegas, Ford.
 32058...G. P. Griffith, Elko, Ford.
 32059...A. E. Allen, Lovelock, Ford.
 32060...W. E. Shostedt, Goodsprings, Knox Tr.
 32061...W. E. Shostedt, Goodsprings, Ford.
 32062...Mrs. Maude Dobbs, Constantia, Dodge.
 32063...John Berry, Ely, Ford.
 32064...J. S. Lyons, Steamboat, Mitchell.
 32065...J. S. Lyons, Steamboat, Chevrolet.
 32066...Alex McIntyre, Reno, Hup.
 32067...H. L. Bruce, Elko, Dodge.
 32068...C. B. Hill, Sparks, Overland.
 32069...F. M. Bullock, Lovelock, Ford.
 32070...Nixon Nevada Mg. Co., Reno, Hudson.
 32071...James Jepson, Sparks, Ford.
 32072...G. S. Wiley, Verdi, Ford.
 32073...Frank J. Gallery, Reno, Ford.
 32074...L. D. Anderson, Clark Station, Ford.
 32075...J. R. Cassana, Reno, Ford.
 32076...Society Cleaners, Reno, Ford.

- 32077....V. Wagner, Reno, Ford.
 32078....Adam Fife, Reno, White.
 32079....L. Zurfuh, Washoe, Buick.
 32080....Ed. W. Clark, Las Vegas, Republic.
 32081....Ed. W. Clark, Las Vegas, Dodge.
 32082....Geo. A. Goodwin, Las Vegas, Ford.
 32083....J. Corron, Carlin, Ford.
 32084....W. H. Morgan, Wichman, Dodge.
 32085....Tracy Fairchild, Tuscarora, Cadillac.
 32086....H. A. Davidson, East Ely, Chevrolet.
 32087....Golconda T. & P. Co., Winnemucca, Ford.
 32088....Golconda T. & P. Co., Lovelock, Ford.
 32089....Manganese Assn., Inc., Las Vegas, Ford.
 32090....E. M. Emery, Searchlight, Saxon.
 32091....W. G. Rawles, Fernley, Buick.
 32092....Bill Antonin, Ely, Maxwell.
 32093....C. M. Pratt, Battle Mountain, Ford.
 32094....Wm. H. Rogers, Las Vegas, Chevrolet.
 32095....G. W. Henderson, Tuscarora, Ford.
 32096....C. F. Markwith, Wellington, Chevrolet.
 32097....A. A. Arends, Yerington, Buick.
 32098....J. G. Kaufman, Yerington, Willys 6.
 32099....G. Scatena, Yerington, Studebaker.
 32100....Geo. F. Butler, Yerington, Cadillac.
 32101....C. L. Connelly, Las Vegas, Ford.
 32102....F. W. Eglington, Las Vegas, Overland.
 32103....Mike Hart, Hasen, Hupmobile.
 32104....D. L. Parkham, Searchlight, Ford.
 32105....W. Barton, Searchlight, Hupmobile.
 32106....Vance Brite, Searchlight, Overland.
 32107....John Hudgens, Searchlight, Ford.
 32108....Reed C. Jones, Fallon, Chevrolet.
 32109....John Brown, Fallon, Ford.
 32110....Emile Mettetal, Elko, Ford.
 32111....E. J. Caffery, Reno, Ford.
 32112....James Passno, Las Vegas, Dodge.
 32113....J. C. Shauer, Reno, Chevrolet.
 32114....H. C. Peters, Lovelock, Ford.
 32115....W. D. Calligan, Lovelock, Ford.
 32116....E. G. Spolinger, Unionville, Ford.
 32117....Humboldt County, Lovelock, Republic.
 32118....Mrs. H. L. Willard, Winnemucca, Buick.
 32119....W. V. Smith, Winnemucca, Ford.
 32120....O. L. Lay, Winnemucca, Ford.
 32121....Otto Reil, Winnemucca, Ford.
 32122....Pete Etchegoyhen, Winnemucca, Ford.
 32123....Mrs. L. Rockwell, Battle Mtn., Ford.
 32124....Nev. Copper Belt Ry. Co., Mason, Reo.
 32125....Robert J. Burgias, Goldfield, Ford.
 32126....Robert Shields, Tonopah, Ford.
 32127....Mrs. E. B. Graham, Goldfield, Ford.
 32128....W. T. Somerville, Tonopah, Ford.
 32129....Pete Chasseur, Wabaska, Ford.
 32130....Pete Chasseur, Wabaska, Overland.
 32131....Frank Barsellos, Mason, Ford.
 32132....W. D. Clair, Goldfield, International.
 32133....W. D. Clair, Goldfield, Jordan.
 32134....G. S. Williams, Yerington, Studebaker.
 32135....John E. Renfro, Mina, Ford.
 32136....Adolph Wehrman, Gardnerville, Ford.
 32137....Henry Wehrman, Gardnerville, Dodge.
 32138....F. R. Howard, Gardnerville, Ford.
 32139....H. O. Lewis, Wichman, Ford.
 32140....A. D. Bird, Reno, Ford.
 32141....C. Eigen, Reno, Ford.
 32142....Ross Petersen, Reno, Chandler.
 32143....Nev. Tire & Battery Co., Reno, Ford.
 32144....U. G. Persing, Reno, Buick.
 32145....F. C. Taillier, Dayton, Buick.
 32146....Jacob M. Simmons, Gerlach, Ford.
 32147....George B. Noble, Sulphur, Ford.
 32148....Jas. M. Leonard, Virginia City, Stude.
 32149....Romeo Rosaschi, Yerington, Ford.
 32150....J. H. Donaldson, Smith, White Steamer.
 32151....Mrs. M. Malley, Mason, Ford.
 32152....J. G. McGowan, Yerington, Reo 6.
 32153....J. G. McGowan, Yerington, Ford.
 32154....C. H. Duborg, Reno, Chalmers.
 32155....J. G. McGowan, Yerington, Ford.
 32156....H. J. Schmith, Battle Mountain, Ford.
 32157....C. C. Tracy, Goldfield, Ford.
 32158....John Agnese, Reno, Dodge.
 32159....H. F. Bloedel, Las Vegas, Dodge.
 32160....R. E. Job, Sparks, Overland.
 32161....Vance M. Morrison, Fallon, Pullman.
 32162....W. R. Coatney, Hazen, Ford.
 32163....D. A. Washburn, Derby, Ford.
 32164....F. A. Konrad, Sparks, Oakland.
 32165....C. E. Corbier, Sparks, Ford.
 32166....P. V. Hull, Ely, Dodge.
 32167....E. L. Philbrook, East Ely, Chevrolet.
 32168....W. B. Calwell, Ely, Reo.
 32169....F. J. Guirnhovich, Ely, Dodge.
 32170....Mrs. Mollie Curtis, Curtis, Reo.
 32171....D. F. Mowery, Lovelock, Hupmobile.
 32172....John Fant, Lovelock, Cadillac.
 32173....Henry Culverwell, Caliente, Ford.
 32174....Edwin Lytle, Uraine, Dodge.
 32175....R. E. Hurd, Rebel Creek, Ford.
 32176....D. J. Kinney, Fallon, Hollier, Mod. 186.
 32177....Mebius & Drescher Co., Reno, Marmon.
 32178....W. M. Rogers, Fallon, Ford.
 32179....B. F. Baker, Mina, Hudson.
 32180....A. Bennett, Derby, Ford.
 32181....Mrs. Mary Semenza, Sparks, Ford.
 32182....John Raffetto, Reno, Ford.
 32183....L. E. Allard, Sparks, Ford.
 32184....Geo. Blundell, Sparks, Ford.
 32185....Geo. H. Brown, Reno, Ford.
 32186....Martin Geraghty, Sparks, Buick.
 32187....Hugh T. Bennett, Ely, Ford.
 32188....H. E. R. Freeman, Ruth, Ford.
 32189....Dick House, Ely, Ford.
 32190....Francis E. Lewis, Ely, Maxwell.
 32191....Frank J. Metts, Ely, Ford.
 32192....W. H. Shelton, Ruth, Maxwell.
 32193....Mrs. Ira J. McKnight, Ely, Chevrolet.
 32194....H. R. Amens, East Ely, Dodge.
 32195....P. G. Morgan, Wichman, Dodge.
 32196....H. S. Morgan, Wichman, Dodge.
 32197....T. R. Cheatham, Reno, Chandler.
 32198....R. B. Brown, Kimberly, Reo.
 32199....C. S. Spencer, Sparks, Dodge.
 32200....Theo. J. Steinmetz, Reno, Buick.
 32201....Thomas R. Gibson, Reno, Reo.
 32202....Frank E. Humphrey, Reno, Reo.
 32203....R. J. Welden, Reno, Buick.
 32204....Clio Lumber Company, Reno, Reo.
 32205....Clio Lumber Company, Reno, Ford.
 32206....Daniel Pomeroy, Oreana, Ford.
 32207....Geo. Mizul, Fallon, Chevrolet.
 32208....William Dykman, Las Vegas, Ford.
 32209....Louis Arechabala, Golconda, Overland.
 32210....W. W. Weathers, Deeth, Oakland.
 32211....W. W. Weathers, Deeth, Ford.
 32212....Sam McLanahan, Goodsprings, Ford.
 32213....Earl W. Nungesser, Las Vegas, Ford.
 32214....Nev. Mach. & Elec. Co., Reno, Ford.
 32215....Condor & Baring, Reno, Chevrolet.
 32216....Beasle B. Peck, Reno, Reo.
 32217....Peck & Sample Co., Reno, Studebaker.
 32218....C. H. Kramer, Fallon, Chevrolet.
 32219....Joe Mangolo, Reno, Studebaker.
 32220....James Sullivan, Reno, Chalmers.
 32221....Mrs. F. M. Capessali, Reno, Studebaker.
 32222....H. Charlebois, Yerington, Reo.
 32223....W. C. Nelson, Minden, Stutz.
 32224....Geo. Humphrey, Reno, Hudson.
 32225....A. Remelli, Reno, Overland.
 32226....Harold Ward, Reno, Chalmers.
 32227....A. J. Catson, Reno, Studebaker.
 32228....A. Robinson, Reno, Overland.
 32229....A. G. Fletcher, Reno, Buick.
 32230....Henrietta Heany, Sparks, Studebaker.
 32231....Steve Capurro & Co., Reno, Reo.
 32232....F. Charlebois, Yerington, Ford.
 32233....Dr. J. E. Pickard, Reno, Buick.
 32234....Dr. J. E. Pickard, Reno, Detroit Elec.
 32235....Nick Sorgi, Reno, Oldsmobile.
 32236....Harry B. Dietz, Fallon, Ford.
 32237....C. L. Steiner, Sparks, Reo.
 32238....Mrs. Della Munn, Fallon, Buick 1914.
 32239....Harry T. Candee, Fallon, I.H.C. Truck.
 32240....Peter Nygren, Fallon, Ford.
 32241....R. L. Thomas, Fallon, Ford.
 32242....G. Siri, Reno, Ford.
 32243....Geo. McCormick, Reno, Ford.
 32244....Chas. Maracci, Reno, Ford.
 32245....Palace Bakery, Reno, Ford.
 32246....Fred Sanza, Reno, Ford.
 32247....F. J. Grenan, Reno, Ford.
 32248....F. Grenan, Fallon, Ford.
 32249....Geo. Orange (Indian) Schurz, Ford.
 32250....H. S. McLeod, Mina, Overland.
 32251....John Williams, Tonopah, G.M.C.

- 32252...J. J. French, Tonopah, Dodge.
 32253...Peter Erikson, Tonopah, Dodge.
 32254...Fred Schenkel, Goldfield, Ford.
 32255...L. G. Ellis, Mason, Ford.
 32256...Henry Lebean, Rawhide, Chevrolet.
 32257...John Lindergreen, Minden, Buick.
 32258...Hugh W. Reilly, Yerington, Dodge.
 32259...F. O. Stickney, Yerington, Buick.
 32260...F. O. Stickney, Yerington, Chevrolet.
 32261...F. W. Mollart, Yerington, Ford.
 32262...A. C. Lindergreen, Yerington, Ford.
 32263...A. Serpentino, Reno, Geo.
 32264...C. L. Cox, Reno, Ford.
 32265...Goldfield Cons. Co., Goldfield, Federal.
 32266...Goldfield Cons. Co., Goldfield, Cadillac.
 32267...Goldfield Cons. M. Co., Goldfield, Buick.
 32268...Fred M. Hansen, Tonopah, Ford.
 32269...S. Pedroll, Franktown, Chalmers.
 32270...L. Munk, Lovelock, Ford.
 32271...W. A. Stante, Lovelock, Studebaker.
 32272...Thomas Nolan, Midas, Runabout.
 32273...H. F. Humphrey, Battle Mtn., Oldsmo.
 32274...Cliff Good, Battle Mountain, Overland.
 32275...Roy Chase, Battle Mountain, Ford.
 32276...J. L. Bryson, Battle Mountain, Ford.
 32277...Claude Bearse, Battle Mtn., Overland.
 32278...John Fader, Carlin, Hupmobile.
 32279...Hammond Ex. Co., Gold Creek, W-K.
 32280...National Cash Market, Reno, Ford.
 32281...National Cash Market, Reno, Ford.
 32282...W. E. Kornmayer, Reno, Buick.
 32283...Joe Elcano, Reno, Buick.
 32284...E. E. Eldredge, Reno, Overland.
 32285...Peter Thomsen, Reno, Overland.
 32286...E. E. Warden, Reno, Mitchell.
 32287...Carl Otto Herz, Reno, Cadillac.
 32288...Richard Herz, Reno, Ford.
 32289...Richard Herz, Reno, Ford.
 32290...Geo. F. Crosby, Reno, Ford.
 32291...Mrs. Marie Atkins, Reno, Dodge.
 32292...Edward C. Baras, Reno, Dodge.
 32293...J. T. Derig, Thorne, Ford.
 32294...J. M. Scott, Reno, Maxwell.
 32295...A. E. Crossett, Reno, Oakland.
 32296...C. McQuerry, Reno, Ford.
 32297...Union Land & Cattle Co., Reno, Ford.
 32298...F. Swartz, Ely, Dodge.
 32299...G. A. Richardson, Oreana, Ford.
 32300...J. W. McGorvan, Austin, Ford.
 32301...W. Frazee, Wonder, Ford.
 32302...Carl F. Muir, Hamilton, Overland.
 32303...L. T. Kendrick, Fallon, Dodge.
 32304...H. C. Hoover, Fallon, Dodge.
 32305...Robt. E. Lee, Fallon, Dort.
 32306...A. W. Edison, Fallon, Maxwell.
 32307...Frank Stange, Halleck, Dodge.
 32308...Ed. Heath, Lamoille, Dodge.
 32309...Dr. M. J. Rand, Elko, Dodge.
 32310...Mrs. L. Stephens, Fallon, Chevrolet.
 32311...Rob. Colgar, Fallon, Ford.
 32312...C. A. Laurence, Stillwater, Buick.
 32313...Oscar Swanson, Fallon, Ford.
 32314...A. Testolin, Fallon, Ford.
 32315...Fred W. Dudley, Fallon, Dort.
 32316...J. E. Bruner, Fallon, Ford.
 32317...L. C. Ayres, Fallon, Chevrolet.
 32318...J. F. Murphy, Austin, Dodge.
 32319...A. J. Maestretti, Austin, Ford.
 32320...John H. Spencer, Austin, Overland.
 32321...R. Menzeberg, Goodsprings, Ford.
 32322...James E. Cox, Goodsprings, Ford.
 32323...Theo. Ascargorta, Berlin, Chevrolet.
 32324...Castro Yorchausti, Berlin, Hupmobile.
 32325...Mercury Mining Co., Berlin, Buick.
 32326...Bernard Francis Henry, Ely, Ford.
 32327...Adams & McGill Co., Ely, Ford.
 32328...Adams & McGill Co., Ely, Ford.
 32329...John Dvnan, Ely, Ford.
 32330...Mrs. John Carroll, Osceola, Ford.
 32331...J. S. Carroll, Ely, Ford.
 32332...A. C. Lindskag, Ely, Buick.
 32333...Lindsay Duncan, McGill, Packard.
 32334...J. Warden, Ely, Olds.
 32335...W. N. McGill, Ely, Stanley Steamer.
 32336...L. G. Cannon, East Ely, Overland.
 32337...W. N. McGill, Ely, Packard.
 32338...Chas. Burke, Ely, Chandler.
 32339...Sam Bassham, Ely, Chandler.
 32340...Joe E. Harris, Ely, Chandler.
 32341...Mrs. W. A. See, Ely, Overland.
 32342...Elko-Lamoille P. Co., Elko, Cadillac.
 32343...Elko-Lamoille P. Co., Elko, Pope-Hart.
 32344...Elko-Lamoille P. Co., Elko, Overland.
 32345...W. M. Weathers, Elko, Franklin.
 32346...W. F. Rutherford, Mtn. City, Dodge.
 32347...Geo. Abbey, Sparks, Lexington.
 32348...Mrs. E. B. Brown, Reno, Saxon.
 32349...Clara A. Boerlin, Aurora, Geo.
 32350...Grover Russell, Carson City, Ford.
 32351...M. E. Sanford, Fallon, Chevrolet.
 32352...J. J. Leonasio, Reno, Oakland 6.
 32353...W. H. McPhail, Sparks, Oakland.
 32354...Wm. Dressler, Minden, Cadillac.
 32355...Mrs. J. L. Wollam, Reno, Ford.
 32356...W. R. McGowan, Yerington, Buick.
 32357...Mrs. E. S. Cross, Yerington, Ford.
 32358...Mrs. E. S. Cross, Yerington, Oakland.
 32359...W. A. Pursel, Yerington, Buick.
 32360...Fred Dunn, Yerington, Maxwell.
 32361...Joe Kambrick, Thompson, Ford.
 32362...E. W. Kronquist, Thompson, Maxwell.
 32363...Mrs. Sarah Rallens, Wabaska, Ford.
 32364...Wm. Rallens, Wabaska, Ford.
 32365...Mrs. J. C. Farrell, Wabaska, Ford.
 32366...R. C. Rogers, Thompson, Ford.
 32367...J. B. Bookman, Mason, Overland.
 32368...S. J. Springer, Simpson, Ford.
 32369...Fred Hansen, Mina, Ford.
 32370...Peter J. Meyer, Luning, Ford.
 32371...Ray D. Johnson, Dayton, Ford.
 32372...Chas. A. Schurman, Wellington, Monroe.
 32373...J. T. Lloyd, Gardnerville, Dodge.
 32374...Ella Booth, Tonopah, Dodge.
 32375...Chas. Tolst, Yerington, Ford.
 32376...Peter Finn, Reno, Ford.
 32377...Rick DeBernardi, Reno, Geo.
 32378...J. W. Wright, Reno, Franklin.
 32379...Lothrop-Davis Co., Tonopah, Ford.
 32380...Lothrop-Davis Co., Tonopah, Ford.
 32381...Lothrop-Davis Co., Tonopah, Republic.
 32382...M. G. McGregor, Tonopah, Ford.
 32383...Tony Brachett, Manhattan, Overland.
 32384...D. E. Hill, Beulah, Oldsmobile.
 32385...Mrs. W. J. Pickrell, Reno, Overland.
 32386...G. B. Spradling, Carson City, Ford.
 32387...H. H. McCreery, Carson City, Chev.
 32388...Grover Stoltz, Ely, Ford.
 32389...L. B. Mathey, Ely, Ford.
 32390...Donnelly L. & L. Co., Gerlach, Ford.
 32391...Donnelly L. & L. Co., Gerlach, Ford.
 32392...L. B. Mathey, Ely, Pan.
 32393...Donnelly L. & L. Co., Gerlach, Buick.
 32394...Donnelly L. & L. Co., Gerlach, Buick.
 32395...Wheeler Livestock Co., Reno, Buick.
 32396...Wheeler Livestock Co., Reno, Chevrolet.
 32397...Wheeler Livestock Co., Reno, Ford.
 32398...Wheeler Livestock Co., Reno, Ford.
 32399...Wheeler Livestock Co., Reno, Ford.
 32400...Wheeler Livestock Co., Reno, Ford.
 32401...Wheeler Livestock Co., Reno, Ford.
 32402...Mrs. D. C. Wheeler, Reno, Liberty.
 32403...Sarah E. Wheeler, Reno, Oldsmobile.
 32404...Tungsten Comet M. Co., Panaca, Saurer.
 32405...Tungsten Comet M. Co., Panaca, Repab.
 32406...M. D. Collins, Reno, Ford.
 32407...A. T. Donnet, Reno, Pope-Hartford.
 32408...Donnels & Steinmetz, Reno, Geo.
 32409...C. R. Carter, Reno, Overland.
 32410...Washoe County Bank, Reno, Geo.
 32411...M. F. Goodwin, Reno, Chevrolet.
 32412...Campbell Furniture Co., Reno, Dodge.
 32413...Campbell Furniture Co., Reno, Chander.
 32414...Troy Power Laundry, Ely, Ford.
 32415...E. J. Stephens, Ely, Paige.
 32416...Troy Power Laundry, Ely, Ford.
 32417...Troy Power Laundry, Ely, Ford.
 32418...Oliver H. McTaggart, Reno, Ford.
 32419...H. F. Everett, Reno, Buick.
 32420...Henry M. Lillis, Las Vegas, Ford.
 32421...Mrs. W. P. Van Meter, Reno, Liberty.
 32422...W. E. Lampson, Reno, Ford.
 32423...W. E. Lampson, Reno, Ford.
 32424...E. C. Whipp, Ruth, Dodge.
 32425...Jack Reiley, McGill, Hup.
 32426...McGill Livery Trans. Co., McGill, White.

32427. McGill Livery Trans. Co., McGill, Buick.
 32428. City Market, Ely, Ford.
 32429. City Market, Ely, Vim.
 32430. C. E. Lord, Ruth, Ford.
 32431. P. B. Kotelman, Lovelock, Ford.
 32432. John H. Ferry, Tippet, Ford.
 32433. Ernest Kesler, Las Vegas, Ford.
 32434. C. A. Shewan, Fanning, Overland.
 32435. C. A. Shewan, Fanning, Ford.
 32436. Rockwell Bros., Las Vegas, Ford.
 32437. J. H. Ladd, Las Vegas, Overland.
 32438. A. H. Long, Battle Mountain, Ford.
 32439. Mrs. Ada Springer, Lovelock, Dodge.
 32440. H. J. Murrish, Lovelock, Buick.
 32441. Boss Gold Mfg. Co., Goodsprings, Buick.
 32442. Joe Baker, Lovelock, Overland.
 32443. H. B. McDonald, Lovelock, Ford.
 32444. B. R. Russell, Sheridan, Ford.
 32445. Dr. G. C. Taylor, Reno, Chevrolet.
 32446. W. A. Harmon, Fallon, Hudson.
 32447. Whitney P. Harmon, Fallon, Ford.
 32448. Peoples Bros., Fallon, Ford.
 32449. M. V. Gilbert, Fallon, Buick.
 32450. E. R. Bailey, Las Vegas, Studebaker.
 32451. Cummins Bros., Montello, Ford.
 32452. Fred V. Cummins, Montello, Ford.
 32453. Cummins Bros., Montello, Ford.
 32454. Cummins Bros., Montello, Federal.
 32455. Orin S. Mead, Wells, Ford.
 32456. H. M. Crow, Wells, Chevrolet.
 32457. W. H. Gibbs, Wells, Ford.
 32458. R. L. Wood, Wells, Overland.
 32459. E. S. Jackson, Wells, Ford.
 32460. R. M. Steele, Wells, Cadillac.
 32461. N. A. Crawford, Battle Mtn., Buick.
 32462. J. P. Ferretto, Reno, Mitchell.
 32463. W. E. Cobb, Reno, Buick.
 32464. Frank L. Tully, Packard, Reo.
 32465. C. R. Holcomb Est. Co., Reno, Ford.
 32466. C. R. Holcomb Est. Co., Reno, Chevrolet.
 32467. C. R. Holcomb Est. Co., Reno, Haynes.
 32468. C. R. Holcomb Est. Co., Reno, Haynes.
 32469. Pierce Evans, Reno, Haynes.
 32470. W. A. Witke, Sparks, Ford.
 32471. W. W. Philbrick, Silver Peak, Overland.
 32472. George A. Collard, Reno, Chevrolet.
 32473. H. E. Ordway, Derby, Ford.
 32474. F. S. Smith, Derby, Ford.
 32475. A. Trewick, Sparks, Overland.
 32476. Calvin E. Davis, Sparks, Chevrolet.
 32477. B. D. Billingshurst, Reno, Ford.
 32478. G. A. Buchanan, Ely, Buick.
 32479. Carl Anderson, Goodsprings, Buick.
 32480. E. D. Frassini, Fallon, Ford.
 32481. E. D. Frassini, Fallon, Monroe.
 32482. Paris Perea, Fallon, Ford.
 32483. E. Opydke, Fallon, Ford.
 32484. Nevada Colony Corp., Fallon, Ford.
 32485. E. E. Schwartz, Fallon, Ford.
 32486. T. F. Frasier, Fallon, Ford.
 32487. F. F. Strassburg, Fallon, Overland.
 32488. Fred Biesta, Gardnerville, Overland.
 32489. E. H. Proctor, Sparks, Oakland.
 32490. Wm. H. Greiner, Gold Hill, Dodge.
 32491. Rev. T. H. Menzel, Gardnerville, Dodge.
 32492. John Thomsen, Gardnerville, Overland.
 32493. U. S. Indian Service, Stewart, Ford.
 32494. U. S. Ind. Serv., Stewart, Grt. Western.
 32495. E. R. Converse, Denio, Republic.
 32496. E. R. Converse, Denio, Federal.
 32497. Carl Herman, Omco, Ford.
 32498. J. D. Jefferson, Tonopah, Dodge.
 32499. Davis Plumbing & H. Co., Reno, Ford.
 32500. Nev. Mine Op. Assn., Reno, Scripps-B.
 32501. Math. Schmitt, Battle Mtn. Overland.
 32502. Dr. W. C. Eastman, Reno, Overland.
 32503. G. T. Wilder, Reno, Studebaker.
 32504. M. Sorensen, Gardnerville, Ford.
 32505. I. A. Lowell, Winnemucca, Ford.
 32506. S. E. Smith, Manhattan, Ford.
 32507. Chas. E. Tracy, Battle Mountain, Ford.
 32508. Chas. Rexol, Reno, Moor.
 32509. Elizabeth C. Hale, Goodsprings, Cad.
 32510. Howard Melvin, Round Mountain, Ford.
 32511. D. M. Haskin, Tonopah, Dodge.
 32512. S. S. Erret, Tonopah, Ford.
 32513. S. C. Lampsa, Tonopah, Ford.
 32514. Joe Knezovich, Tonopah, Republic.
 32515. J. R. Perry, Goldfield, Dodge.
 32516. J. B. Kiernan, Beatty, Ford.
 32517. C. R. Beck, Beatty, Ford.
 32518. A. Greenwood, Thompson, Buick.
 32519. W. A. Wright, Candelaria, Ford.
 32520. J. W. Mallory, Hawthorne, Hupmobile.
 32521. D. J. Thies, Yerington, Ford.
 32522. D. J. Thies, Yerington, Overland.
 32523. N. B. Kyker, Yerington, Overland.
 32524. Mrs. W. A. Keymers, Yerington, Buick.
 32525. C. S. Durand, Yerington, Ford.
 32526. Geo. F. Keema, Mason, Chevrolet.
 32527. F. A. Litch, Reno, Dodge.
 32528. Mrs. M. L. Heinz, Chilcot, Cal., Ford.
 32529. Mrs. Thos. Scott, Platora, Dodge.
 32530. C. B. Likes, Fallon, Ford.
 32531. C. B. Likes, Fallon, Chevrolet.
 32532. A. Jones, Ely, Ford.
 32533. A. Jones, Ely, Little Giant.
 32534. A. Jones, Ely, Ford.
 32535. Fred J. Schwab, Ely, Ford.
 32536. P. L. Nelson, Reno, Ford.
 32537. U. M. Slater, Reno, Ford.
 32538. C. M. Howard, North Fork, Oldsmobile.
 32539. W. D. Armstrong, Elko, Buick.
 32540. Carl Stoffelt, Winnemucca, Ford.
 32541. Etta Baker, Winnemucca, Ford.
 32542. Walter Scott, McDermitt, Ford.
 32543. W. J. Hammill, Mina, Haynes.
 32544. C. C. Turney, Winnemucca, Ford.
 32545. H. L. Walker, Beowawe, Ford.
 32546. B. T. Walker, Beowawe, Ford.
 32547. W. M. Brown, Searchlight, Liberty 6.
 32548. C. W. Pierce, Reno, Buick.
 32549. Wood Curtis Co., Reno, Ford.
 32550. Wood Curtis Co., Reno, Ford.
 32551. H. L. Gleason, Reno, Ford.
 32552. Union Mill & Lumber Co., Reno, Ford.
 32553. W. M. Ireland, Reno, Buick.
 32554. John Boland, Reno, Ford.
 32555. A. Savalagui, Reno, Cadillac.
 32556. W. H. Osmun, Sparks, Studebaker.
 32557. C. B. Rice, Fallon, Ford.
 32558. Tim M. Sullivan, Stillwater, Chevrolet.
 32559. E. P. McLean, Fallon, Hollier.
 32560. Gray, Reid & Co., Fallon, Ford.
 32561. Gray, Reid & Co., Fallon, Ford.
 32562. J. J. Rossiter, Sparks, Ford.
 32563. A. A. Codd, Reno, Reo.
 32564. A. A. Codd, Reno, Ford.
 32565. C. K. Mathewson, Fallon, Ford.
 32566. J. N. Tedford, Fallon, Ford.
 32567. J. N. Tedford, Fallon, Cadillac.
 32568. L. R. Butter, Fallon, Reo 5.
 32569. L. A. Styles, Fallon, Ford.
 32570. George Villeneuve, Fallon, Buick.
 32571. Kinkead Livestock Co., Fallon, Cadillac.
 32572. Mrs. L. G. Wedekind, Fernley, Ford.
 32573. W. J. Forbes, Deeth, Ford.
 32574. Isaac Gregg, Deeth, Ford Roadster.
 32575. Mrs. S. C. Weeks, Wells, Ford.
 32576. Mrs. G. R. Vardy, Wells, Ford.
 32577. Frankie Avansino, Verdi, Dodge.
 32578. Gardner Ranch Co., Alamo, Dodge.
 32579. M. I. Newkirk, Las Vegas, Ford.
 32580. John Moe, Fernley, Ford.
 32581. H. B. Pratt, Fernley, Ford.
 32582. J. C. Reed, Fernley, Buick.
 32583. Mrs. Rosa Boles, Wadsworth, Ford.
 32584. L. L. Kaiser, Imlay, Michigan.
 32585. William A. Marshall, Austin, Chandler.
 32586. R. W. Hooper, Eureka, Dodge.
 32587. D. States, Eureka, Ford.
 32588. C. W. Griswold, Elko, Dodge.
 32589. Griswold & Henderson, Elko, Reo 6.
 32590. B. Sutton, Elko, Ford.
 32591. Hoyt Merc. Co., Lamolite, Republic.
 32592. Gus Neiderberger, McGill, Ford.
 32593. John F. Horen, McGill, Dodge.
 32594. H. I. Olinghouse, Pioche, Dodge.
 32595. Pioche L. & Meat Co., Pioche, Ford.
 32596. C. J. Heidman, Lovelock, Maxwell.
 32597. Donald Maclean, Carson City, Cadillac.
 32598. Ernest Pfeifer, Virginia City, Buick.
 32599. E. V. Pettie, Genoa, Ford.
 32600. Wm. Wagner, Reno, Chevrolet.
 32601. Mrs. Queen W. Dukes, Mason, Reo.

- 32602...Geo. E. Wilson, Yerington, Reo.
 32603...John Tiel, Gardnerville, Ford.
 32604...L. Lawrensen, Gardnerville, Hudson.
 32605...F. S. Springmeyer, Gardnerville, Ford.
 32606...Peter Jacobsen, Gardnerville, Ford.
 32607...H. C. Hellwinkel, Gardnerville, Overld.
 32608...Walter Frey, Gardnerville, Ford.
 32609...Walter Frey, Gardnerville, Overland.
 32610...Fred Houston, Minden, Buick.
 32611...Geo. Houston, Minden, Ford.
 32612...Benny James, Gardnerville, Chevrolet.
 32613...R. A. Trimmer, Genoa, Ford.
 32614...Fritz Schacht, Minden, Chevrolet.
 32615...Ernest Bartels, Gardnerville, Buick.
 32616...Fred Lange, Gardnerville, Buick.
 32617...Wm. Stodick, Gardnerville, Buick.
 32618...Wm. Stodick, Gardnerville, Buick.
 32619...Herman Muller, Gardnerville, Overland.
 32620...Wm. Rabe, Gardnerville, Overland.
 32621...Wm. Lampe, Gardnerville, Case.
 32622...Wm. Lampe, Gardnerville, Case.
 32623...Ugene Manfrena, Wellington, Overland.
 32624...John Christensen, Gardnerville, Dodge.
 32625...Fritz Bohman, Sheridan, Overland.
 32626...Henry Scheele, Gardnerville, Overland.
 32627...Henry Neelander, Gardnerville, Buick.
 32628...C. D. Richardson, Goldfield, Buick.
 32629...H. B. Beardman, Reno, Hupmobile.
 32630...C. Scatena, Yerington, Studebaker.
 32631...Gus Raessler, Mina, Studebaker.
 32632...Allen Tallant, Manhattan, Ford.
 32633...Mrs. C. I. Everett, Wellington, Ford.
 32634...Manhattan Cons. Mines Dev. Co., Tonopah, Ford.
 32635...D. Durand, Sparks, Gen. Del.
 32636...W. Stokes, Reno, Ford.
 32637...H. Heitman, Gardnerville, Overland.
 32638...Manuel P. Monro, Smith, Ford.
 32639...Dick Thran, Gardnerville, Buick.
 32640...C. R. Douglass, Tonopah, Overland.
 32641...Eva Roth, Darrough Hot Sprgs., Buick.
 32642...Matt T. Kane, Manhattan, Studebaker.
 32643...H. F. Kalkbrenner, Manhattan, Ford.
 32644...I. A. Moore, Round Mountain, Stude.
 32645...Mrs. C. A. Perrine, Round Mtn., Over.
 32646...Gus Peterson, Bellehelen, Ford.
 32647...L. K. Gebhardt, Tonopah, Ford.
 32648...F. E. Messinger, Tonopah, Saxon 6.
 32649...A. H. Keenan, Tonopah, Dodge.
 32650...Pat McAuliffe, Goldfield, Ford.
 32651...I. Woolverton, Genoa, Ford.
 32652...A. Pardini, Yerington, Maxwell.
 32653...Chas. Beusain, Ludwig, Ford.
 32654...Henry Behrman, Gardnerville, Buick.
 32655...Roy Stover, Ely, Ford.
 32656...L. A. Sorenson, Kimberly, Ford.
 32657...Peter Robertson, Kimberly, Ford.
 32658...Stanley Parson, Kimberly, Ford.
 32659...Vito Locourt, Kimberly, Ford.
 32660...Vito Locourt, Kimberly, Ford.
 32661...M. S. Douglas, Ely, Ford.
 32662...Wm. L. Andrews, Ely, Ford.
 32663...L. D. Blum, McGill, Ford.
 32664...A. Maracini, Kimberly, National.
 32665...Mrs. Lynn Tint, Ely, Dodge.
 32666...J. R. Tullis, Imlay, Ford.
 32667...Data Bros., Kimberly, Reo.
 32668...A. E. Cartledge, Kimberly, Chandler.
 32669...A. H. Campbell, Ely, Paige.
 32670...S. P. Culp, Ruth, Buick.
 32671...John E. Bowers, Kimberly, Apperson.
 32672...Mike Bosta, Kimberly, Jordan.
 32673...O. C. Dickinson, Reno, Haynes.
 32674...Joe Trugola, Mound House, Overland.
 32675...J. A. Erikson, Reno, Overland.
 32676...Geo. E. Cremer, Reno, Oakland.
 32677...W. F. Spalding, Fallon, Chevrolet.
 32678...F. F. Smith, Derby, Ford.
 32679...H. E. Mornston, Sparks, Ford.
 32680...E. O. Splatt, Reno, Ford.
 32681...L. Jensen, Reno, Ford.
 32682...Phil Lewis, Reno, Ford.
 32683...C. C. Miller, Sparks, Ford.
 32684...Guy Von Staden, Reno, Morris.
 32685...C. H. Knox, Reno, Haynes.
 32686...Mrs. J. T. Wilcox, Caliente, Ford.
 32687...Wilkes J. Campbell, Pioche, Ford.
 32688...Thos. McKinnon, Caliente, Ford.
 32689...George M. Seuter, Caliente, Ford.
 32690...A. H. Berning, Carlin, Ford.
 32691...Samuel Shaw, Jr., Las Vegas, Oakland.
 32692...J. G. Laravey, Las Vegas, Ford.
 32693...Phil Rankin, Jean, Ford.
 32694...E. J. Cesana, Sparks, Studebaker.
 32695...Mrs. Walter Gammon, Sparks, Ford.
 32696...John Crosson, Elko, Overland.
 32697...C. W. Clubine, Lamolive, Dodge.
 32698...Joe G. Deceember, McGill, Ford.
 32699...J. E. Morgan, Ely, Ford.
 32700...J. B. Cushman, Fallon, Buick 4.
 32701...Wm. B. Coleman, Carson City, Ford.
 32702...M. Hansen, Gardnerville, Ford.
 32703...M. Hansen, Gardnerville, Overland.
 32704...John Rubke, Carson City, Maxwell.
 32705...Chris Nielson, Minden, Velie.
 32706...J. Ellasondobery, Carson City, Dodge.
 32707...W. Robham, Silver, Haynes.
 32708...Geo. D. Smith, Carson City, Haynes.
 32709...Peter Williams, Carson City, Ford.
 32710...F. W. Taylor, Tonopah, Ford.
 32711...G. C. Smith, Simpson, Ford.
 32712...J. D. Yeager, Simpson, Ford.
 32713...Herman Luhnman, Minden, Chevrolet.
 32714...Fravel Paymaster M. Co., Reno, Fed.
 32715...Fravel Paymaster M. Co., Reno, Ford.
 32716...White Caps M. Co., Manhattan, Little G.
 32717...M. Dellamonica, Yerington, Ford.
 32718...Grulli & Sons, Yerington, Oakland.
 32719...A. Sciarani, Yerington, Ford.
 32720...Dave Paquint, Yerington, Saxon.
 32721...West Hardware Co., Yerington, Ford.
 32722...H. H. Steck, Yerington, Chevrolet.
 32723...Ruel Depoali, Yerington, Ford.
 32724...C. Menesini, Yerington, Oakland 6.
 32725...Gus Gigolos, Yerington, Dort.
 32726...Bert Louis, Yerington, Reo 6.
 32727...L. E. Gunters, Reno, Dodge.
 32728...D. S. Malkovich, Tonopah, Ford.
 32729...W. J. Dailey, Mason, Chevrolet.
 32730...F. B. Balzar, Hawthorne, Dodge.
 32731...Ira Sepulveda, Deeth, Ford.
 32732...J. J. Sweet, Tonopah, Chandler.
 32733...Louis Norris, Tonopah, Ford.
 32734...Jay Henderson, Tonopah, Overland.
 32735...Fred A. Milliken, Pioneer, Metz.
 32736...W. B. Mercer, Goldfield, Hupmobile.
 32737...J. B. Gilbreth, Manhattan, Ford.
 32738...Mrs. L. P. McKelvey, Tonopah, Ford.
 32739...John E. Price, Manhattan, Chevrolet.
 32740...San Courts (Indian), Round Mt., EMF.
 32741...Burt McKay, Battle Mountain, Ford.
 32742...J. T. Goodin, Lovelock, Reo 6.
 32743...Ely Light and P. Co., East Ely, Ford.
 32744...Olive Olose, Sparks, Hupmobile.
 32745...Martin Jensen, Sparks, Oakland.
 32746...C. J. Christensen, Sparks, Overland.
 32747...W. G. Baker, Sparks, Ford.
 32748...H. Harris, Sparks, Ford.
 32749...J. C. Day, Sparks, Ford.
 32750...John Semenza, Reno, Overland.
 32751...Semenza Grocery, Reno, Ford.
 32752...Waits Bros., Reno, Ford.
 32753...Bruneau Sheep Co., Elko, GMC.
 32754...Ralph L. Rich, Elko, Dodge.
 32755...Ely Securities Co., East Ely, Hup.
 32756...Mrs. E. L. Williams, Reno, Hudson.
 32757...Jay H. Clemons, Reno, Liberty.
 32758...Mrs. M. B. Ritter, Reno, Studebaker.
 32759...T. R. Weber, Beowawe, Dodge.
 32760...A. Altenburg, Battle Mtn., Ford.
 32761...Wm. Altenburg, Battle Mtn., Ford.
 32762...C. W. Foote, Fallon, Marmon.
 32763...Geo. H. Mitchell, Fallon, Chevrolet.
 32764...Fred Hawkins, Fallon, Ford.
 32765...Getto Bros., Fallon, Maxwell.
 32766...C. C. Everett, Fallon, Hupmobile.
 32767...Arthur J. Hord, Elko, Studebaker 6.
 32768...E. T. Binkley, Fallon, Reo.
 32769...Geo. Lewis, Fallon, Ford.
 32770...E. C. Smith, Reno, Franklin.
 32771...Charles Parker, Reno, Reo.
 32772...Dr. C. T. Starr, Reno, Studebaker.
 32773...Peter Etchegoin, Reno, Dodge.
 32774...R. H. Cowles, Reno, Buick.
 32775...D. B. Douvaraz, Reno, Chevrolet.

- 32776...Waltz Bros., Reno, Ford.
 32777...Thos. W. Chase, Reno, Reo. 6.
 32778...A. F. McPhail, Sparks, Ford.
 32779...Flanigan Warehouse Co., Reno, Federal.
 32780...W. E. Brown, Reno, Hudson.
 32781...Geo. Sini, Reno, Ford.
 32782...Geo. Sini, Reno, Ford.
 32783...V. L. Adams, Reno, Buick.
 32784...I. Schultz, Reno, Studebaker.
 32785...Alfred Doull, McGill, Dodge.
 32786...Carrol Kelsey, Reno, Ford.
 32787...Henry J. Packard, Lovelock, Buick.
 32788...J. H. McCracken, Lovelock, Maxwell.
 32789...Campton Com. Co., Ely, Republic.
 32790...Campton Com. Co., Ely, Republic.
 32791...Campton Com. Co., Ely, Republic.
 32792...Campton Commercial Co., Ely, Ford.
 32793...Campton Commercial Co., Ely, Ford.
 32794...F. T. West, Ely, Dodge.
 32795...G. W. Turner, Ely, Mitchell.
 32796...Gertrude Vance, Reno, Dodge.
 32797...D. A. Whitaker, Fallon, Ford.
 32798...G. M. Lofthouse, Fallon, Hupmobile.
 32799...S. J. Taylor, Wonder, Ford.
 32800...Amiceto Villanueva, Fallon, Saxon.
 32801...A. P. Maestretti, Austin, Ford.
 32802...Chas. De Moisy, Jr., Elko, Dodge.
 32803...W. R. Bellinger, Lee, Dodge.
 32804...M. P. Armatrang, Elko, Buick.
 32805...J. W. McCann, Currant, Ford.
 32806...Tod Maltby, McGill, Ford.
 32807...Jas. H. Marriott, Osceola, Ford.
 32808...Vite Jauregui, Elko, Chevrolet.
 32809...Fred C. Schermer, Elko, Ford.
 32810...Fred C. Schermer, Elko, Dodge.
 32811...Otto Omen, Reno, Dodge.
 32812...Henry Rovelli, Reno, Reo.
 32813...Geo. W. Gill, Reno, Chevrolet.
 32814...Paul Garson, Verdi, Reo.
 32815...E. J. Kleppe, Reno, Ford.
 32816...J. F. Kleppe, Reno, Studebaker.
 32817...F. W. Steiner, Sparks, Oakland.
 32818...Frank Campbell, Reno, Buick.
 32819...Conradt Bros., Reno, Chevrolet.
 32820...A. E. Lasher, Reno, Studebaker.
 32821...Ray Hilton, Reno, Studebaker.
 32822...W. C. Bright, Desert, Ford.
 32823...C. E. Van Ness, Las Vegas, Chandler.
 32824...Thomas Allen, Las Vegas, Overland.
 32825...W. P. Thomas, Las Vegas, Dodge.
 32826...Standard Oil Co., Las Vegas, Republic.
 32827...Lon Groesbeck, Las Vegas, Peerless.
 32828...Geo. D. Ernst, Fallon, Chandler.
 32829...Geo. D. Ernst, Fallon, Ford.
 32830...W. L. Morehouse, Fallon, Ford.
 32831...G. C. Hill, Verdi, Overland.
 32832...Commercial Hdw. Co., Reno, Ford.
 32833...J. E. Horgan, Reno, Ford.
 32834...F. D. Bale, Reno, Chevrolet.
 32835...Chas. F. DeArmond, Elko, Dodge.
 32836...R. A. Miller, Fallon, Ford.
 32837...C. E. Allen, Fallon, Ford.
 32838...John Capurro, Reno, Hudson.
 32839...John Capurro, Reno, Ford.
 32840...Tim Mahoney, McGill, Overland.
 32841...Geo. R. Cettie, Ely, Paige.
 32842...E. N. Jackson, Ely, Ford.
 32843...Mrs. Lane Pearl, Ely, Ford.
 32844...Alex Kolcheck, Ely, Ford.
 32845...Alex Baird, Ely, Ford.
 32846...L. Snyder, Baker, Hupmobile.
 32847...Peter Espagna, Ely, Ford.
 32848...A. W. Sharp, Ely, Ford.
 32849...Al Long, Ruth, Chevrolet.
 32850...White Pine Tel. Co., Ely, Chevrolet.
 32851...W. Frank Goodner, Reno, Monroe.
 32852...F. Whitaker, Rebel Creek, Overland.
 32853...L. G. Gill, Pioche, Oldsmobile.
 32854...Less Lytle, Uraine, Ford.
 32855...Jaca Com. Co., Inc., McDermitt, Buick.
 32856...Hodges Cook Merc. Co., Pioche, Ford.
 32857...Hodges Cook Merc. Co., Pioche, Ford.
 32858...Wm. H. Pitts, Pioche, Buick.
 32859...Geo. Bowman, McGill, Studebaker.
 32860...Jack Wright, Yerington, Ford.
 32861...Clara Butler, Yerington, Buick.
 32862...M. R. Penrose, Yerington, Lexington.
 32863...L. A. L. Green, Washoe, Reo 4.
 32864...Frank Forville, Lo. Rochester, Ford.
 32865...D. W. Walcott, Sparks, Mitchell.
 32866...E. W. Dinges, Lovelock, Ford.
 32867...D. Quilici Bros., Wells, Dodge.
 32868...D. Quilici Bros., Wells, Ford.
 32869...T. C. Sharpe, Reno, Reo 6.
 32870...H. H. Trundo, Mound House, Ford.
 32871...W. C. Pitt, Lovelock, Ford.
 32872...O. A. Perry, Yerington, Buick.
 32873...W. C. Pitt, Lovelock, Buick.
 32874...A. Quilici, Reno, Mitchell.
 32875...Mrs. Helen M. Kaiser, Sparks, Ford.
 32876...D. P. Downs, Sparks, Ford.
 32877...Fred Strauss, Virginia City, Ford.
 32878...F. Antonio Figma, Reno, Oakland.
 32879...O. T. Van Sickle, Gardnerville, Case.
 32880...Al. Thyberg, McGill, Ford.
 32881...Ely Home Laundry Co., Ely, Ford.
 32882...C. T. Gaby, Kimberly, Ford.
 32883...H. S. Arnoldson, Preston, Ford.
 32884...Andy Hexem, Ely, Ford.
 32885...Art. C. Barnes, Ely, Ford.
 32886...Lars Rundberg, Ely, Dodge.
 32887...C. W. Stokesberry, Ely, Chevrolet.
 32888...Gus Pulkos, Ely, Paige.
 32889...Wm. Holder, Kimberly, Reo.
 32890...Andy Hexem, Ely, Paige.
 32891...Bert Webb, Ely, Dodge.
 32892...Frank W. Hammond, Fallon, Chevrolet.
 32893...Brewster Adams, Reno, Reo.
 32894...Jas. Riddell, Deeth, Studebaker.
 32895...L. K. Miller, Ely, Dodge.
 32896...Chas. Holmes, McGill, Chandler.
 32897...F. C. Nunnely, East Ely, Chandler.
 32898...J. H. Miller, Hawthorne, Cadillac.
 32899...Adams & Miller, Hawthorne, Ford.
 32900...A. Fellenburn, Mina, Overland.
 32901...C. A. Brennen, Elko, Dodge.
 32902...Dr. W. D. Mason, Elko, Reo.
 32903...J. H. Hay, Elko, Ford.
 32904...F. M. Butler, Elko, Olds.
 32905...Alex D. McCulloch, Elko, Mack.
 32906...Wm. E. Toney, Vya, Ford.
 32907...O. E. Baker, McGill, Ford.
 32908...F. Schlomberg, Yerington, Buick.
 32909...C. E. Hillbun, Yerington, Ford.
 32910...Wm. Reinhart, Vya, Dodge.
 32911...H. D. Gwinner, Goodsprings, Flanders.
 32912...C. F. Stock, Fernley, Chevrolet.
 32913...Mrs. E. L. Kelley, Reno, Maxwell.
 32914...F. E. Glass, Reno, Hupmobile.
 32915...A. B. Graham, Reno, Scripps-Booth.
 32916...Wm. R. Adams, Sparks, Studebaker.
 32917...Geo. G. Schweis, Reno, Ford.
 32918...Geo. G. Schweis, Reno, Ford.
 32919...Geo. G. Schweis, Reno, Ford.
 32920...Lillian L. Breen, Reno, Cadillac.
 32921...John McNamara, Sparks, Dodge.
 32922...Henry H. Lee, Panaca, Dodge.
 32923...Phillip Mathews, Panaca, Chevrolet.
 32924...Chas. Slaughter, Pioche, Pullman.
 32925...H. L. Kane, Goldfield, Ford.
 32926...A. P. Ten Voord, Eureka, Ford.
 32927...Mrs. A. J. Aikens, Fallon, Stearns-Kn.
 32928...Clyde Beecher, Reno, Overland.
 32929...F. E. Nichols, Fallon, Chevrolet.
 32930...Joe York, Fallon, Ford.
 32931...J. Walter Johnson, Fallon, Dodge.
 32932...Frank Mack, Arden, Perkins.
 32933...B. F. Sing, Arden, Maxwell.
 32934...James O'Grady, Las Vegas, Overland.
 32935...Wm. J. Crozier, Nelson, Ford.
 32936...W. J. Neeley, Wadsworth, Ford.
 32937...Joe Lowry, Nixon, Ford.
 32938...R. E. Niddagh, McGill, Premier.
 32939...Jno. D. Ray, Ely, Ford.
 32940...J. H. Bitner, Ruth, Ford.
 32941...Elmer C. Conlin, Ely, Buick.
 32942...Nicholas Paul, Ruth, Studebaker.
 32943...Alfred Bellander, Baker, Chandler.
 32944...Mrs. Ida Willis Fallon, Overland.
 32945...Chas. D. Gallagher, Ely, Dodge.
 32946...Eureka Land & S. Co., Eureka, Dodge.
 32947...Manuel Bastida, Eureka, Studebaker.
 32948...Geo. Hildebrand, Eureka, Ford.
 32949...Clement Maggini, Eureka, Chevrolet.

- 32950...Angelo Berolo, Eureka, Ford.
 32961...Eureka Land & S. Co., Eureka, Ford.
 32952...W. M. McCaffery, Reno, Hudson.
 32963...J. E. Smith, Reno, Studebaker.
 32964...Dr. W. J. Lawson, Virginia, Reo 5.
 32955...Sol Summerfield, Mina, Hudson.
 32966...H. A. Elander, Washoe, Packard.
 32957...W. K. Ball, Washoe, Ford.
 32958...Dr. A. R. DaCosta, Reno, Studebaker.
 32959...John Lewis (Indian) Silver Peak, Buick.
 32960...M. W. Chistovich, Silver Peak, Ford.
 32961...J. A. Coughlin, Silver Peak, Ford.
 32962...Joseph Bruder, Goldfield, Ford.
 32963...E. E. Palmer, Beatty, Overland.
 32964...Par Jordan, Goldfield, Ford.
 32965...C. C. Braun, Dayton, Buick.
 32966...C. C. Braun, Dayton, Buick.
 32967...C. H. Swart, Dayton, Overland.
 32968...Hoffman & Nickelson, Tonopah, Cad.
 32969...James Gordon, Mina, Ford.
 32970...Helen R. Shipley, Tonopah, Dodge.
 32971...J. W. Ross, Luning, Ford.
 32972...E. Garaventa, Virginia, Buick.
 32973...J. M. Savante, Candelaria, Ford.
 32974...Mrs. E. H. Scott, Mason, Overland.
 32975...Edward Bergstrom, Yerington, Dodge.
 32976...Eather U. Kantus, Tonopah, Buick.
 32977...L. A. Fischer, Manhattan, Ford.
 32978...F. F. Garside, Tonopah, Saxon 6.
 32979...H. Reischke, Tonopah, Hupmobile.
 32980...Clark James, Manhattan, Studebaker.
 32981...Geo. H. Sharp, Currant, Ford.
 32982...I. Ferguson, Reno, Pope Hartford.
 32983...Albert Johnson, Tonopah, Ford.
 32984...W. B. Evans, Tonopah, Ford.
 32985...Mrs. W. B. Evans, Tonopah, Ford.
 32986...N. M. McCormick, Tonopah, Ford.
 32987...J. P. Hart, Tonopah, Ford.
 32988...J. F. Booth, Reno, Ford.
 32989...E. Segale, Virginia City, Ford.
 32990...A. E. Hammond, Reno, Ford.
 32991...John Avansino, Reno, Ford.
 32992...Frank Campbell, Reno, Ford.
 32993...B. S. Cole, Reno, Ford.
 32994...R. L. Branton, Reno, Ford.
 32995...E. W. Woodward, Reno, Ford.
 32996...C. A. Ramell, Reno, Ford.
 32997...John P. Caulfield, Jr., Ruth, Paige.
 32998...Sam O'Connell, Lovelock, Dodge.
 32999...Ed. Beckman, Pioneer, Metz.
 33000...C. Escallier, Reno, Chevrolet.
 33001...Percival Nash, Reno, Dodge.
 33002...L. L. Selna, Reno, Chevrolet.
 33003...S. Lockett, Reno, Ford.
 33004...Geo. Biddleman, Reno, Cole 8.
 33005...S. Peterson, Sparks, Ford.
 33006...S. Peterson, Sparks, Ford.
 33007...W. W. Goodrich, Reno, Ford.
 33008...H. E. Snare, Reno, Studebaker.
 33009...J. M. Higgins, Reno, Studebaker.
 33010...Gladys Frazier, Reno, Chevrolet.
 33011...F. Smith - J. Reed, Sparks, Michigan.
 33012...Wm. J. Zachringer, Sparks, Reo.
 33013...Rogers Cash Grocery, Reno, Ford.
 33014...B. N. Lear, Lamoille, Ford.
 33015...Mrs. Geo. H. Clark, Carlin, Dodge.
 33016...D. C. Adamson, Unionville, Ford.
 33017...Mrs. W. B. Borden, Unionville, Ford.
 33018...Fritz Walti, Tonkin, Ford.
 33019...Henry Robbins, Goodsprings, White.
 33020...Henry Robbins, Goodsprings, Hup.
 33021...C. D. Breese, Las Vegas, Ford.
 33022...John Johnson, Reno, Buick.
 33023...A. Paterson, Reno, Buick.
 33024...Mrs. A. Paterson, Reno, Chandler.
 33025...James Patterson, Reno, Reo.
 33026...A. J. Rankin, Hazen, Overland.
 33027...C. W. Cavitt, Reno, Hupmobile.
 33028...W. W. Parke, Lovelock, Dodge.
 33029...Inez Laveaga, Winnemucca, Studebaker.
 33030...John Etcheverry, Winnemucca, Reo.
 33031...Winnemucca M. Co., Winnemucca, Ford.
 33032...L. R. Minor, Winnemucca, Ford.
 33033...T. J. Edwards, Carson City, Cadillac.
 33034...Lawrence Miller, Willow Point, Ford.
 33035...Gerhart Miller, Willow Point, Ford.
 33036...L. C. Johnson, Winnemucca, Metz.
 33037...Gil Prida, Winnemucca, Ford.
 33038...F. D. Brown, Winnemucca, Ford.
 33039...Pete Garteiz, Winnemucca, Ford.
 33040...A. T. Robinson, Reno, Ford.
 33041...Geo. B. Cook, Fallon, Ford.
 33042...Clyde E. Jewett, Fallon, Ford.
 33043...A. A. Smith, Wonder, Ford.
 33044...E. M. Smith, Wonder, Ford.
 33045...T. C. Hart, Fallon, Maxwell.
 33046...J. W. Ferguson, Fallon, Dodge.
 33047...Wm. Wintz, Fallon, Ford.
 33048...W. P. Woodward, Fallon, Ford.
 33049...Cora Ferguson, Fallon, Buick.
 33050...J. W. Carson, Fallon, Ford.
 33051...E. Ashton, Fallon, Ford.
 33052...G. C. Kallenback, Fallon, Overland.
 33053...C. L. Benadum, Fallon, Service.
 33054...P. W. Hibbard, Fallon, Dodge.
 33055...Caseiton & Shafer, Fallon, Stephens-D.
 33056...C. L. Benadum, Fallon, Chandler.
 33057...C. L. Benadum, Fallon, Dorris.
 33058...F. Oar, Fallon, Overland.
 33059...C. L. Benadum, Fallon, Ford.
 33060...C. L. Benadum, Fallon, Ford.
 33061...C. L. Benadum, Fallon, Ford.
 33062...C. L. Benadum, Fallon, Ford.
 33063...C. L. Benadum, Fallon, Ford.
 33064...C. L. Benadum, Fallon, Ford.
 33065...A. W. Hesson Co., Elko, Studebaker.
 33066...A. W. Hesson, Elko, Studebaker.
 33067...R. W. Hesson, Elko, Studebaker.
 33068...Fernando Goicochea, Elko, Studebaker.
 33069...Griswold & Henderson, Elko, Mack.
 33070...Jas. Sutcliffe, Pyramid, Dodge.
 33071...S. A. Imelli, Gardnerville, Willys-Kn.
 33072...Imelli Meat Co., Gardnerville, Stude.
 33073...Mrs. C. W. Hawkins, Genoa, Ford.
 33074...T. M. Grousell, San Jacinto, Ford.
 33075...Carson Brewing Co., Carson City, Ford.
 33076...Carson Brewing Co., Carson City, Ford.
 33077...Carson Brewing Co., Carson City, Reo.
 33078...W. G. Box, Sr., Hawthorne, Cadillac.
 33079...R. R. Craig, Tonopah, Ford.
 33080...Carson Valley H. & P. Co., Minden, Fd.
 33081...Dr. E. E. Rhodes, Reno, Overland.
 33082...A. Steward, Reno, Ford.
 33083...William B. Adams, Genoa, Mitchell.
 33084...J. A. Bettling, Gardnerville, Hudson.
 33085...Louis Tognini, Carson City, Buick.
 33086...Chas. E. Anderson, McGill, Ford.
 33087...G. G. Allen, Ruth, Ford.
 33088...L. W. Berrum, Reno, Overland.
 33089...S. H. Rosenthal, Reno, Buick.
 33090...P. M. Burns, Reno, Cartcar.
 33091...Mrs. A. Besso, Reno, Chalmers.
 33092...U. W. Hanson, Steamboat, Chevrolet.
 33093...Harry Robinson, Mill City, Dort.
 33094...Gus Laurent, Austin, Buick.
 33095...V. E. Kinney, Elko, Ford.
 33096...F. E. Baker, Lovelock, Oakland.
 33097...J. B. Foltz, Lovelock, Briscoe.
 33098...Fred Backus, Golconda, Ford.
 33099...A. H. Woodward, Goodsprings, Ford.
 33100...A. E. Markwith, Goodsprings, Ford.
 33101...A. A. Mustard, Fallon, Overland.
 33102...Albert J. Franck, Reno, Stutz.
 33103...Bower Brothers, Lamoille, Ford.
 33104...Bower Brothers, Lamoille, Ford.
 33105...A. M. Olin, Elko, Studebaker.
 33106...W. M. Porter, Elko, Buick.
 33107...Peter Etchart, Elko, Oldsmobile.
 33108...J. H. Casier & Sons Co., Wells, Ford.
 33109...Ed. M. McFaul, Genoa, Ford.
 33110...J. H. Casier & Sons Co., Wells, Ford.
 33111...J. H. Casier & Sons Co., Wells, Ford.
 33112...Joe McMaster, Ely, Ford.
 33113...James J. Berryman, Reno, Buick.
 33114...M. M. Baumann, Fallon, Chevrolet.
 33115...H. J. Anderson, Reno, Ford.
 33116...Laurence Petrionovich, Reno, Buick.
 33117...Ely Ice Mfg. Co., Ely, Republic.
 33118...Ely Ice Mfg. Co., Ely, Vim.
 33119...James C. Riordan, Lund, Reo.
 33120...C. C. Richardson, Baker, Maxwell.
 33121...Mrs. Herman Fransen, Lovelock, Stude.
 33122...Arthur A. Primeaux, Midas, Nash.
 33123...Arthur A. Primeaux, Midas, Overland.

- 33124....Elko Prince M. Co., Midas, Oldsmobile.
 33125....Mrs. W. C. Hancock, Battle Mtn., Reno.
 33126....Elko Prince M. Co., Midas, Overland.
 33127....Dan Gabiola, Battle Mtn., Chevrolet.
 33128....John Baitano, Cortez, Ford.
 33129....Henry Palma, Eureka, Ford.
 33130....Jos. Hutchinson, Metropolis, Overland.
 33131....J. Gregovich, Sparks, Ford.
 33132....R. L. Robinson, Sparks, Buick.
 33133....George G. Sims, Reno, Ford.
 33134....E. Reinhardt Co., Winnemucca, Internl.
 33135....Winnemucca W. & L. Co., Winnemucca, Fd.
 33136....J. C. Games, Reno, Ford.
 33137....J. C. Games, Reno, Federal.
 33138....J. C. Games, Reno, Kleiber.
 33139....Jack Frey, Reno, Ford.
 33140....Jack Frey, Reno, Reno.
 33141....Andrew Frandsen, Reno, Jeffrey.
 33142....Andrew Frandsen, Reno, Hudson.
 33143....Andrew Frandsen, Reno, Pilot.
 33144....May L. Gignoux, Reno, Maxwell.
 33145....Edith Marrow, Reno, Ford.
 33146....Jens Jensen, Verdi, Reno.
 33147....W. H. Richards, Fallon, Ford.
 33148....A. M. Frolson, Fallon, Case.
 33149....R. T. Walker, Fallon, Ford.
 33150....Potts Brothers, Potts, Hudson.
 33151....Albert Jones, Fallon, Cole.
 33152....J. A. Wood, Fallon, Maxwell.
 33153....J. T. Theyer, Fallon, Overland.
 33154....F. C. Erb, Fallon, Ford.
 33155....Gustaf Hallgreen, Fallon, Oldsmobile.
 33156....F. F. Frank, Fallon, Ford.
 33157....C. A. Jones, Fallon, Buick.
 33158....W. E. Staup, Stillwater, Ford.
 33159....W. E. Staup, Stillwater, Ford.
 33160....B. B. Grable, Fallon, Case.
 33161....H. G. Wendt, Fallon, Chevrolet.
 33162....J. F. Bowler, Austin, Hudson Super 6.
 33163....J. F. Bowler, Austin, Ford.
 33164....T. Lompa & Co., Ione, Republic.
 33165....R. C. Johnstone, Ione, Ford.
 33166....R. C. Johnstone, Ione, Ford.
 33167....R. C. Johnstone, Ione, Chase.
 33168....G. W. Cotant, Elko, Studebaker.
 33169....C. H. Hale, Elko, Dodge.
 33170....Geo. O. James, Reno, Ford.
 33171....J. C. Johnson, Sparks, Oldsmobile.
 33172....Dr. John Tees, Reno, Oldsmobile.
 33173....Geo. T. Ferris, Reno, Cadillac.
 33174....Arthur Holman, Ludwig, Overland.
 33175....J. C. Brumley, Reno, Oldsmobile.
 33176....C. F. Hurd, Simpson, Dodge.
 33177....E. W. Brown, Mina, Buick.
 33178....L. G. Stice, Wabuska, Ford.
 33179....N. P. Nelson, Wabuska, Ford.
 33180....Yerington Creamery Co., Mason, Ford.
 33181....N. K. Franklin, Manhattan, Dodge.
 33182....M. F. Kelly, Tonopah, Ford.
 33183....Peak Mines Co., Silver Peak, Buick.
 33184....Mike Dondoro, Hawthorne, Ford.
 33185....H. J. Long, Mason, Willys-Knight.
 33186....F. J. Matthews, Mason, Willys-Overland.
 33187....Mason Mercantile Co., Mason, Overland.
 33188....Mason Mercantile Co., Mason, Ford.
 33189....W. E. Dennis, Goldfield, Studebaker.
 33190....R. E. Turner, Round Mountain, Ford.
 33191....Mrs. M. Dreyer, Rhyolite, Ford.
 33192....L. V. Cirac, Tonopah, Ford.
 33193....Dan Devlin, Round Mountain, Ford.
 33194....Thomas Hunt, Tonopah, Chevrolet.
 33195....Chas. E. Stewart, Tonopah, Ford.
 33196....M. Pardini, Yerington, Dodge.
 33197....Ernest Gioachini, Yerington, Ford.
 33198....Mrs. C. J. Sharon, Virginia City, Buick.
 33199....Fanny D. Guttery, Yerington, Dodge.
 33200....May Lois McLeod, Tonopah, Ford.
 33201....Ed. Byrne, Tonopah, Ford.
 33202....A. C. Leonard, Tonopah, Locomobile.
 33203....C. C. Boak, Tonopah, Dodge.
 33204....Victor Stancher, Tonopah, Ford.
 33205....J. W. Berg, Round Mountain, Ford.
 33206....J. W. Berg, Round Mountain, Cadillac.
 33207....Bert Baroni, Reno, Haynes.
 33208....C. C. Perry, Yerington, Ford.
 33209....E. H. Whitacre, Yerington, Ford.
 33210....W. H. Scott, Dayton, Dodge.
 33211....Jim Hawkins, Genoa, Grant 6.
 33212....Mrs. H. Keyes, Reno, Buick.
 33213....Luke Hardwick, Silver City, Dodge.
 33214....S. H. Brady, Reno, Franklin.
 33215....Mrs. C. McTigue, Silver City, Hudson.
 33216....Knox Johnson, Gardnerville, Dodge.
 33217....S. J. McLean, Stewart, Ford.
 33218....L. A. Friedman, Lovelock, Oakland.
 33219....L. A. Friedman, Lovelock, Packard.
 33220....L. A. Friedman, Lovelock, Studebaker.
 33221....R. Nenzel, Lovelock, Overland.
 33222....C. E. Wedertz, Wellington, Hudson.
 33223....M. E. McGrath, Reno, Scripps-Booth.
 33224....E. Johnson, Carson City, Buick.
 33225....John A. Erickson, Mason, Studebaker.
 33226....Geo. L. Sanford, Carson City, Haynes.
 33227....W. W. Wishon, Searchlight, Vim.
 33228....Leo Springmeyer, Gardnerville, Dodge.
 33229....Tony Borsi, Reno, Buick.
 33230....Tippett Merc. Co., Tippett, Federal.
 33231....Tippett Merc. Co., Tippett, Buick.
 33232....J. Bernasconi, Reno, Ford.
 33233....J. Floyd Slutter, Mason, Ford.
 33234....Hotel Nev. Mng. Co., Las Vegas, Ford.
 33235....Hotel Nev. Mng. Co., Las Vegas, Ford.
 33236....J. Gastanaga, Paradise Valley, Dodge.
 33237....John H. Dolan, Aurum, Ford.
 33238....F. Ambrosette, Carson City, Overland.
 33239....Ed. J. Walsh, Carson City, Ford.
 33240....N. A. Brown, Reno, Reno.
 33241....Harry Ginsburg, Reno, Reo 6.
 33242....Robert Valcalda, Reno, Buick.
 33243....E. Vogliotti, Reno, Chalmers.
 33244....Frank Loughton, Reno, Chevrolet.
 33245....F. G. Whiting, Reno, Ford.
 33246....Geo. R. Emery, Reno, Cadillac.
 33247....P. W. Duffin, Caliente, Ford.
 33248....Jas. A. Abbott, Bunkerville, Ford.
 33249....Vic. Hancock, Mesquite, Ford.
 33250....C. E. Franklin, Battle Mtn., Ford.
 33251....Dr. S. R. Clark, Battle Mtn., Ford.
 33252....Clark Bros., Battle Mountain, Ford.
 33253....Ely Water Co., East Ely, Ford.
 33254....Geo. M. Winburn, Sparks, Dodge.
 33255....Mark L. Yori, Reno, Oldsmobile.
 33256....George Yori, Reno, Haynes.
 33257....Mrs. L. Yori, Reno, Oldsmobile.
 33258....Novacovich Merc. Co., Reno, Ford.
 33259....Mrs. Cora T. Jenkins, Reno, Case.
 33260....F. H. Murphy, Eagleville, Dorris.
 33261....George Schoer, Wells, Ford.
 33262....Jas. Ralph Wells, Wells, Cole 8.
 33263....W. J. Smiley, Deeth, Overland.
 33264....P. J. Shea, Reno, Willys-Knight.
 33265....The Bullion Mng. Co., Jean, Ford.
 33266....J. B. Philips, Jean, Ford.
 33267....Mrs. Grace E. Swander, Elko, Ford.
 33268....Jean R. Driggs, Kimberly, Oldsmobile.
 33269....Harry Randall, McGill, Ford.
 33270....White Pine County, Ely, Ford.
 33271....White Pine County, Ely, Dodge.
 33272....Chas. Sherman, Reno, Chevrolet.
 33273....Joe Casazza, Reno, Case.
 33274....A. Bindewald, Derby, Ford.
 33275....E. H. Clark, Reno, Buick.
 33276....Clarence Farnsworth, Reno, Hudson.
 33277....Ed. T. Morgan, Northam, Chevrolet.
 33278....Mrs. H. P. Beer, Reno, Pilot.
 33279....J. J. Murtagh, Reno, Buick.
 33280....Rainier Brewing Co., Reno, Ford.
 33281....Louis G. Milobara, Reno, Maxwell.
 33282....The Groom Mine, Indian Springs, Truck.
 33283....R. Sandusky, Reno, Buick.
 33284....The Groom Mine, Indian Springs, Dodge.
 33285....Garaventa L. & L. Co., Wadsworth, Ford.
 33286....Garaventa L. & L. Co., Wadsworth, Ford.
 33287....Otto Kattenhorn, Battle Mtn., Chalmers.
 33288....R. C. Lochridge, Goodsprings, Ford.
 33289....Julia Lorenzi, Las Vegas, Regal.
 33290....Frank D. Hawn, Las Vegas, Buick.
 33291....L. S. Whipple, Virginia City, Hupmobile.
 33292....Lenora P. Wheeler, McGill, Chevrolet.
 33293....Joe Jarvis, Fallon, Dodge.
 33294....R. J. Lofthouse, Fallon, Ford.
 33295....Ernest Warr, Fallon, Ford.
 33296....John Murrin, Battle Mountain, Ford.
 33297....Louis Dauberg, Wonder, Hudson.
 33298....Antone Siri, Paliade, Dodge.
 33299....Chris Schreiber, Wendover, Ford.

- 33300....Antone Zunino, Jiggs, Dodge.
 33301....Pedro Ollibarrío, Elko, Dodge.
 33302....Manuel E. Axvedo, Fallon, Chevrolet.
 33303....Mrs. Ella St. Pierre, Reno, Dort.
 33304....H. W. Bruner, Bruner, King.
 33305....Kansas City Nev. M. Co., Bruner, Case.
 33306....Kansas City Nev. M. Co., Bruner, Ford.
 33307....Kansas City Nev. M. Co., Bruner, Ford.
 33308....Mrs. C. Glaser, Halleck, Ford.
 33309....Mrs. C. Glaser, Halleck, Studebaker.
 33310....M. B. Crowley, Fallon, Chevrolet.
 33311....Thomas W. Clark, Fallon, Ford.
 33312....R. S. Makinson, Fallon, Ford.
 33313....F. P. Langan, Virginia City, Reo 6.
 33314....J. W. Varnoy, Fallon, Reo.
 33315....Ira Winters, Carson City, Scripps-B.
 33316....Geo. H. Rich, Gardnerville, Ford.
 33317....G. L. Bartmess, Deeth, Ford.
 33318....Gustaf Schaves, Olinghouse, Ford.
 33319....Geo. Cohnan, McGill, Ford.
 33320....J. Hellwinkel, Gardnerville, Chevrolet.
 33321....Joe Martinelli, Minden, Overland.
 33322....Henry Mack, Minden, Chevrolet.
 33323....Chris Hellwinkel, Gardnerville, Ford.
 33324....James Hickey, Gardnerville, Ford.
 33325....Geo. Bull, Gardnerville, Ford.
 33326....I. Jones, Sheridan, Overland.
 33327....Frank Gallanar, Gardnerville, Ford.
 33328....T. T. Vansickle, Genoa, Buick.
 33329....Peter Petersen, Gardnerville, Ford.
 33330....W. E. Allen, Smith, Ford.
 33331....Wm. Bartels, Gardnerville, Overland.
 33332....Pete Jensen, Gardnerville, Overland.
 33333....Geo. K. Edler, Reno, Buick.
 33334....Alphon Glock, Gardnerville, Ford.
 33335....A. Jensen, Gardnerville, Ford.
 33336....Sidney Dack, Gardnerville, Ford.
 33337....W. H. Settemeyer, Gardnerville, Ford.
 33338....Morton Gray, Gardnerville, Ford.
 33339....N. H. Chapin, Ely, Oldsmobile.
 33340....Carl Heltman, Gardnerville, Ford.
 33341....E. W. Carman, Gardnerville, Ford.
 33342....J. E. Currie, Gardnerville, Buick.
 33343....W. D. Park, Minden, Buick.
 33344....Burt Dack, Minden, Ford.
 33345....Wm. Schacht, Minden, Dodge.
 33346....Chris Hellwinkel, Gardnerville, Buick.
 33347....Peter Jensen, Gardnerville, Overland.
 33348....Henry Cordes, Gardnerville, Dodge.
 33349....C. H. Hellwinkel, Gardnerville, Over.
 33350....Olga Christensen, Gardnerville, Dodge.
 33351....A. Schalk, Gardnerville, Studebaker.
 33352....A. Jensen, Gardnerville, Dodge.
 33353....F. C. Heise, Gardnerville, Overland.
 33354....H. W. Settemeyer, Gardnerville, Chaud.
 33355....C. E. Thompson, Gardnerville, Hudson.
 33356....Halvor Jacobsen, Gardnerville, Dodge.
 33357....E. W. Carman, Gardnerville, Jackson.
 33358....Fred W. Palmer, Minden, Buick.
 33359....William Donovan, Silver, Duplex.
 33360....Fred Way, Reno, Buick.
 33361....R. T. Bright, Carson City, Dodge.
 33362....Geo. L. Nicholas, Yerington, Ford.
 33363....A. Belmont, Stewart, Ford.
 33364....A. Belmont, Stewart, Ford.
 33365....Mrs. T. B. Sullivan, Carson, Saxon 6.
 33366....Mrs. F. Elges, Gardnerville, Hudson 6.
 33367....E. C. Howard, Gardnerville, Ford.
 33368....J. O. Parker, Wabuska, Oldsmobile.
 33369....E. E. Hull, Yerington, Haynes.
 33370....Jas. Nugent, Yerington, Dodge.
 33371....W. A. Swalley, Thompson, Ford.
 33372....Peter A. Filoena, Mason, Overland.
 33373....Mrs. R. H. Beard, Thompson, Buick.
 33374....Charles Huber, Tonopah, Overland.
 33375....John H. Shepard, Tonopah, Ford.
 33376....Joseph B. Nay, Belmont, Studebaker.
 33377....C. E. Blaylock, Tonopah, Ford.
 33378....Egbert Pollard, Tonopah, Chevrolet.
 33379....J. W. Stewart & Co., Tonopah, Ford.
 33380....J. W. Stewart & Co., Tonopah, GMC.
 33381....U. Grant Mattingley, Manhattan, Cad.
 33382....H. G. Grant, Tonopah, Ford.
 33383....R. Grieci, Dayton, Buick.
 33384....H. H. Brown, Tonopah, Hudson S. 6.
 33385....Mrs. Chris. Johnson, Tonopah, Buick.
 33386....Martin Williams, Tonopah, Reo.
 33387....Wm. R. Bozarth, Tonopah, Oakland 6.
 33388....Hazel Perry, Tonopah, Dodge.
 33389....Tonopah Mines Hos. Assn., Pierce Ar.
 33390....Mrs. J. G. Kerchen, Tonopah, Hud. S. 6.
 33391....J. G. Kerchen, Tonopah, Hudson S. 6.
 33392....J. B. Gerenet, Tonopah, Cadillac.
 33393....Nevada State Co., Tonopah, Packard.
 33394....Nevada State Co., Tonopah, Cadillac.
 33395....Lundee Bros., Tonopah, Ford.
 33396....Tonopah Bot. Wks., Tonopah, Ford.
 33397....G. W. Hay, Yerington, Ford.
 33398....D. C. Jones, Sweetwater, Dodge.
 33399....D. McLagan, Yerington, Ford.
 33400....Ernest Desnos, Goldfield, Maxwell.
 33401....J. P. Faber, Yerington, Ford.
 33402....W. O. Davis, Tonopah, Chalmers.
 33403....John Truman, Reno, Overland.
 33404....R. J. Kelly, Tonopah, Hudson Super 6.
 33405....Campbell Kelly, Inc., Tonopah, W. Util.
 33406....H. P. Campbell, Tonopah, Hupmobile.
 33407....Lorine E. Woodward, Goldfield, Buick.
 33408....Montana-Tonopah M. Co., Tonopah, Cad.
 33409....Archie T. Cook, Round Mtn., Ford.
 33410....Fred Minning, Round Mountain, Ford.
 33411....Alvey Miller, Hawthorne, Dodge.
 33412....Bill S. Schooley, Yerington, Ford.
 33413....J. E. Gelder, Yerington, Hup.
 33414....Wm. Ziegler, Manhattan, Ford.
 33415....R. G. Steel, Belmont, Ford.
 33416....W. R. Iden, Tonopah, Overland.
 33417....H. D. Porter, Rhyolite, Dodge.
 33418....E. M. Kirchen, Manhattan, Marmon.
 33419....Clarence A. Menke, Reno, Ford.
 33420....M. B. Kennedy, Reno, Ford.
 33421....Ed. Hancock, Reno, Maxwell.
 33422....Mrs. Anna Collins, Reno, Ford.
 33423....C. A. Scott, Reno, Ford.
 33424....A. L. Loughton, Verdi, Stevens-D.
 33425....Mrs. Jennie Adams, Reno, Cadillac.
 33426....Mrs. Gladys Putney, Manhattan, Ford.
 33427....J. A. Curran, Tonopah, Dodge.
 33428....J. A. Curran, Tonopah, Ford.
 33429....United Cattle & P. Co., Goldfield, Buick.
 33430....United Cattle & P. Co., Goldfield, Dorris.
 33431....United Cattle & P. Co., Goldfield, Liberty.
 33432....United Cattle & P. Co., Goldfield, Ford.
 33433....United Cattle & P. Co., Goldfield, Ford.
 33434....J. M. Combelleck, Tonopah, Buick.
 33435....Geo. E. McKenna, Goldfield, Dodge.
 33436....Charlie Hall, Tonopah, Ford.
 33437....Alex Chisholm, Mason, Ford.
 33438....Geo. B. Clark, Schurz, Mitchell.
 33439....E. O. Shaughnessy, Mason, Reo 4.
 33440....Sol. J. Lachman, Reno, Willys-Knight.
 33441....J. C. Becker, Reno, Buick.
 33442....Chas. O. Gasho, Reno, Hup.
 33443....A. E. Kibble, Reno, Maxwell.
 33444....C. M. Richardson, Deeth, Ford.
 33445....Mrs. M. M. Smith, East Ely, Pratt.
 33446....R. H. Wolverton, Elko, Ford.
 33447....Robert M. Price, Reno, Franklin.
 33448....John E. Yrasoqui, Currie, Dodge.
 33449....Jose J. Berrueta, Elko, Chandler.
 33450....Mrs. E. Smith, Franktown, Studebaker.
 33451....W. W. Christian, Austin, Dodge.
 33452....W. W. Christian, Austin, Cadillac.
 33453....Harry H. Mayes, Elko, Hudson.
 33454....C. E. Mills, Fallon, Buick.
 33455....F. L. Mantey, Ely, Overland.
 33456....C. L. Noble, Fallon, Ford.
 33457....Jay L. Heady, Fallon, Mitchell.
 33458....Jay L. Heady, Fallon, Studebaker.
 33459....Harold P. Hale, Elko, Buick.
 33460....Mrs. L. N. Smith, Reno, Chevrolet.
 33461....F. E. Durham, Verdi, Reo.
 33462....W. W. Freeberg, Reno, Chevrolet.
 33463....Mrs. Hunt, Reno, Oldsmobile.
 33464....Geo. C. Larson, Baker, Ford.
 33465....G. W. Pratt, Elko, Hudson.
 33466....Ed. Lytton, Elko, Buick.
 33467....J. H. Hennen, Lamolite, Studebaker.
 33468....Peter Gennette, Elko, Kissel.
 33469....Carl Gilbert, Elko, Buick.
 33470....O. C. Gazel, Las Vegas, Maxwell.
 33471....A. W. Ham, Las Vegas, Ford.
 33472....R. J. Gray, Wells, Ford.
 33473....Madison Anderson, Golconda, Ford.

- 33474....Mrs. M. Anderson, Golconda, Overland.
 33475....I. P. Carpenter, Ione, Dodge.
 33476....D. W. Frank, Elko, Ford.
 33477....A. L. McGinty, Elko, Oldsmobile.
 33478....S. Roth, Reno, Ford.
 33479....W. T. Golding, Nixon, Dodge.
 33480....Dr. F. H. Phillips, Reno, Paige.
 33481....Dr. F. H. Phillips, Reno, Overland.
 33482....Elmer Irish, Reno, Hupmobile.
 33483....W. C. Wilson, Reno, Overland.
 33484....John Nones, Reno, Ford.
 33485....R. F. Gulley, Wells, Buick.
 33486....Arthur Griswold, Lurline, Oldsmobile.
 33487....Chas. G. Lyon, Austin, Ford.
 33488....P. S. Parker, Las Vegas, Ford.
 33489....Ely Packing Company, Ely, Ford.
 33490....W. V. Richardson, Tonopah, Chandler.
 33491....Ely Packing Company, Ely, Ford.
 33492....John Huttman, Fallon, Ford.
 33493....Peter Peterson, Austin, Dodge.
 33494....O. P. McGarr, Fernley, Maxwell.
 33495....W. G. Morse, Las Vegas, Ford.
 33496....John C. Shepard, Fallon, Ford.
 33497....Verdi Lumber Co., Winnemucca, Reo.
 33498....H. H. Sheldon, Winnemucca, Overland.
 33499....Nicolas Aldorniz, Winnemucca, Grant 6.
 33500....John Sanger, Carson City, Dodge.
 33501....R. E. Tilden, Winnemucca, Buick.
 33502....M. Arbolias, Winnemucca, Mitchell.
 33503....W. O. Baber, Sr., McDermitt, Ford.
 33504....Ida C. Workman, Winnemucca, Ford.
 33505....N. A. Gillilan, Paradise, Ford.
 33506....C. E. Kennedy, Winnemucca, Ford.
 33507....J. B. Twiss, Winnemucca, Ford.
 33508....Morris Tracy, Mill City, Ford.
 33509....C. R. Squires, Winnemucca, Ford.
 33510....Mrs. C. P. Forgnone, Paradise, Ford.
 33511....Grant Smith, Baker, Ford.
 33512....Hockmann & Smith, Baker, Republic.
 33513....B. P. Hookman, Baker, Ford.
 33514....Morris Roberts, Ruth, Overland.
 33515....C. A. Norcross, Reno, Buick.
 33516....Arthur E. Murchill, Reno, Overland.
 33517....Nev. Con. Copper Co., McGill, Packard.
 33518....Nev. Con. Copper Co., McGill, Reo.
 33519....Nev. Con. Copper Co., McGill, Franklin.
 33520....Nev. Con. Copper Co., McGill, Packard.
 33521....Nev. Con. Copper Co., McGill, Packard.
 33522....Nev. Con. Copper Co., Ruth, Packard.
 33523....Nev. Con. Copper Co., Ruth, Packard.
 33524....Nev. Con. Copper Co., Ruth, Packard.
 33525....Nev. Con. Copper Co., Ruth, Hudson.
 33526....Nev. Con. Copper Co., McGill, Vim.
 33527....Nev. Con. Copper Co., McGill, Packard.
 33528....The Empire Zinc Co., Arden, Dodge.
 33529....The Empire Zinc Co., Arden, Saurer.
 33530....Jack Reynolds, Las Vegas, Ford.
 33531....J. M. Benedict, Lower Rochester, Ford.
 33532....Daniel Morton, Carson City, Overland.
 33533....V. E. Dignon, Carson City, Ford.
 33534....Matt Kyle, Reno, Ford.
 33535....J. A. Dodson, Carson City, Ford.
 33536....M. J. McVeigh, Tonopah, Ford.
 33537....Nevada Rand M. Co., Reno, Oakland.
 33538....Mrs. Jesse Mellan, Rand, Oldsmobile.
 33539....Frank Baglin, Sweetwater, Ford.
 33540....F. E. Valencia, Reno, Ford.
 33541....J. H. Hasting, Searchlight, Ford.
 33542....Rose Young, Reno, Buick.
 33543....R. D. Jackson, Reno, Ford.
 33544....M. J. Curtis, Reno, Dodge.
 33545....Mrs. Joseph Giraud, Reno, Cadillac.
 33546....Henry Marquart, Genoa, Buick.
 33547....W. T. Echols, Reno, Studebaker.
 33548....Mrs. Alfred Peckham, Reno, Ford.
 33549....Mrs. Chas. Toland, Tonopah, Ford.
 33550....Mrs. E. Neubaumer, Round Mtn., Ford.
 33551....B. F. Rogers, Round Mtn., Ford.
 33552....Phil Meyers, Millet, Dodge.
 33553....Wm. H. Collins, Tonopah, Dodge.
 33554....Albert Schnitzer, Virginia City, Reo.
 33555....Mary L. Richards, Manhattan, Ford.
 33556....Yerington Merc. Co., Yerington, Ford.
 33557....Elwood Luce, Yerington, Studebaker.
 33558....Mrs. Leta T. Bliss, Carson City, Ford.
 33559....Yerington Merc. Co., Yerington, Ford.
 33560....Dan Bagneschi, Yerington, Ford.
 33561....Emilio Diassi, Yerington, Ford.
 33562....Angelo Digno, Yerington, Ford.
 33563....Brougher Divide M. Co., Tonopah, Fd.
 33564....John DuPratt, Tonopah, Dodge.
 33565....Rita D. Miller, Hawthorne, Ford.
 33566....Joe Siri, Hawthorne, Ford.
 33567....John Andrews, Hawthorne, Ford.
 33568....Al. Annett, Mina, Duplex.
 33569....Albert Brown, Candelaria, Ford.
 33570....Geo. Fasick, Mina, Ford.
 33571....O. E. Schiffner, Tonopah, Overland.
 33572....C. G. West, Reno, Reo.
 33573....W. H. Yarco, Reno, Ford.
 33574....Reno Italian-French Fac., Reno, Ford.
 33575....Mrs. F. E. French, Reno, Ford.
 33576....T. H. Blundell, Wadsworth, Ford.
 33577....F. A. Elliott, Reno, Ford.
 33578....T. W. Martinez, Reno, Ford.
 33579....H. F. Alps, Reno, Dodge.
 33580....Roger Fenton, Lovelock, Ford.
 33581....Robert Carlson, Reno, Chandler.
 33582....Nevada Fire Ins. Co., Reno, Studebaker.
 33583....H. L. Tuttle, Wells, Chevrolet.
 33584....J. A. Hansen, Wells, Ford.
 33585....Albert Goble, Jr., Wells, Ford.
 33586....E. Ralff, Wells, Ford.
 33587....Thos. Yowell, Wells, Ford.
 33588....B. W. Wolverton, Wells, Ford.
 33589....Mother's Bakery, Ely, Dodge.
 33590....Samuel Lamont, Ely, Buick.
 33591....A. Darrah, Ely, Ford.
 33592....J. E. Johnson, Kimberly, Ford.
 33593....August Munter, Ely, Ford.
 33594....Peter Patello, Kimberly, Ford.
 33595....H. J. Bath, Carson City, Ford.
 33596....W. C. Van Heut, Carson City, Reo 5.
 33597....A. F. Neidt, Reno, Buick.
 33598....C. H. Gorman, Reno, Dodge.
 33599....University of Nevada, Reno, Dodge.
 33600....Thos. Wilslef, Gardnerville, Case.
 33601....Ryan Fruit Co., East Ely, Ford.
 33602....Ryan Fruit Co., East Ely, Ford.
 33603....Arnold Spitz, McGill, Metz.
 33604....Standard Oil Co., Lovelock, Ford.
 33605....Standard Oil Co., Lovelock, Maxwell.
 33606....Standard Oil Co., Lovelock, Garford.
 33607....J. Semenza & Co., Sparks, Ford.
 33608....G. Rossi & Co., Reno, Ford.
 33609....Frank N. Turner, Sparks, Studebaker.
 33610....R. P. Lamborn, McGill, Dodge.
 33611....Chas. D. Roeder, Reno, Chevrolet.
 33612....C. E. Weck, Reno, Studebaker.
 33613....F. A. Williams, Reno, Reo.
 33614....J. E. Thornton, Fallon, Ford.
 33615....Lewis A. Pringle, Fallon, Studebaker 6.
 33616....Henry Phillips, Fallon, Dodge.
 33617....E. D. Harriman, Fallon, Oldsmobile.
 33618....Jerry M. Wildes, Fallon, Chevrolet.
 33619....H. E. Nickell, McGill, Ford.
 33620....I. C. Johnson, Las Vegas, Ford.
 33621....J. L. Holcomb, Las Vegas, Metz.
 33622....W. H. Elwell, Las Vegas, Ford.
 33623....H. H. Coryell, Wells, Dodge.
 33624....Frank Snodgrass, Lovelock, Overland.
 33625....Humboldt County M. & Co., Lovelock, Buick.
 33626....Nev. Rand Mines Co., Reno, Ford.
 33627....C. F. Whipple, Montello, Ford.
 33628....Ennis Brown Co., Reno, Ford.
 33629....E. P. Starr, Battle Mountain, Ford.
 33630....E. P. Starr, Battle Mountain, Ford.
 33631....W. O. Young, McGill, Maxwell.
 33632....Joe. L. Teis, Ely, Buick.
 33633....Ollie Searing, Ely, Maxwell.
 33634....F. J. Reilly, Ely, Overland.
 33635....Gus Jeffries, Kimberly, Buick.
 33636....F. W. Fletcher, Cherry Creek, Ford.
 33637....A. E. McCauley, Ely, Ford.
 33638....F. L. Padgett, Kimberly, Ford.
 33639....E. H. Richardson, Ely, Ford.
 33640....Joe Rosevear, Duckwater, Ford.
 33641....J. W. Walker, Cherry Creek, Ford.
 33642....R. A. Bass, Fallon, Ford.
 33643....Thos. Williamson, Fallon, Ford.
 33644....W. M. Anderson, Ely, Overland.
 33645....Jas. L. Filbey, Las Vegas, Ford.
 33646....Harry Golding, Reno, Willys-Knight.

- 33647...Mr. Claussen, Reno, Overland.
 33648...Mrs. C. Thuessen, Sparks, Hupmobile.
 33649...David Casazza, Reno, Buick.
 33650...R. M. Guthrie, Reno, Franklin.
 33651...J. H. Welch, Reno, Overland.
 33652...Bert McKee, Elko, Hudson.
 33653...Chas. Ziegler, McGill, Hup.
 33654...J. H. McCarran and E. Peppel, Good-
 springs, Buick.
 33655...O. C. Boggs, Las Vegas, Stutz.
 33656...Boggs Bros., Las Vegas, Ford.
 33657...Boggs Bros., Las Vegas, Ford.
 33658...Jube Wright, Elko, Ford.
 33659...Scott Griswold, Lee, Oldsmobile.
 33660...A. E. Hayden, Reno, Buick.
 33661...B. F. Berkley, Reno, Ford.
 33662...Fulstone Bros., Wellington, Buick.
 33663...G. E. Kitzmeyer, Carson City, Buick.
 33664...G. E. Kitzmeyer, Carson City, S.&S.
 33665...John Uhalde, Gardnerville, Buick.
 33666...D. Okomoto, Yerington, Chevrolet.
 33667...Mrs. M. D. Cecil, Carson City, Oldsmo.
 33668...George E. Troasi, Reno, Liberty.
 33669...P. S. Jensen, Reno, Ford.
 33670...P. S. Jensen, Reno, Hudson.
 33671...T. Westfall, Reno, Studebaker.
 33672...Frank Wheeler, Reno, Ford.
 33673...P. S. Jensen, Reno, Chalmers.
 33674...Dan F. Lund, Reno, Ford.
 33675...H. J. Robertini, Reno, Maxwell.
 33676...B. Brown, M.D., Yerington, Reo.
 33677...J. A. Antrim, Lovelock, Ford.
 33678...James Potter, Baker, Ford.
 33679...Axel Bellander, Baker, Studebaker.
 33680...Tom Murphy, McGill, Overland.
 33681...J. Spina, Reno, Willys-Knight.
 33682...Holbrook, Merrill & Stetson, San Fran-
 cisco, Franklin.
 33683...D. W. Calden, Reno, Studebaker.
 33684...Edna Barker, Reno, Cadillac.
 33685...Joseph Eason, Austin, Ford.
 33686...Norris J. Bertrand, Reno, Maxwell.
 33687...W. H. Johnston, Reno, Oakland.
 33688...Kate Hurtubise, Reno, Ford.
 33689...Ralph Yalletti, Sparks, Chandler.
 33690...W. Funk, Reno, Studebaker.
 33691...Arthur S. Mayer, McGill, Buick.
 33692...Horace Jones, Overton, Ford.
 33693...Mrs. Julia Davison, Las Vegas, Dodge.
 33694...Ralph McElroy, Elko, Chevrolet.
 33695...Geo. B. Williams, Fallon, Hudson.
 33696...Geo. B. Williams, Fallon, Dodge.
 33697...E. W. Bailey, Fallon, Studebaker.
 33698...A. D. Drumm, Fallon, Chevrolet.
 33699...A. D. Drumm, Fallon, Ford.
 33700...Fred D. Fox, Verdi, Ford.
 33701...J. B. Fofanelli, Deeth, Dodge.
 33702...Geo. Howe, Reno, Buick.
 33703...Ed. Vachina, Reno, Chevrolet.
 33704...Mrs. A. E. Hammond, Reno, Reo.
 33705...Frank A. Delery, Palisade, Ford.
 33706...Mrs. W. S. Elliott, Ely, Packard.
 33707...W. S. Elliott, Ely, Packard.
 33708...A. A. Buchanan, Tonopah, Ford.
 33709...Chas. Wilkinson, Tonopah, Chevrolet.
 33710...Herman L. Fritz, Tonopah, Chevrolet.
 33711...Geo. M. Knoe, Tonopah, Ford.
 33712...Joseph Binder, Goldfield, Ford.
 33713...E. W. Bartlett, Goldfield, Cadillac.
 33714...R. C. Laub, Goldfield, Ford.
 33715...Wittenberg Warehouse & Transfer Co.,
 Tonopah, Pierce Arrow.
 33716...Mrs. R. H. Burdick, Tonopah, Hup.
 33717...Wittenberg Warehouse & Transfer Co.,
 Tonopah, Pierce Arrow.
 33718...Wittenberg Warehouse & Transfer Co.,
 Tonopah, Pierce Arrow.
 33719...Tonopah Mh. Auto Co., Tonopah, Pope.
 33720...Mh. Union Am. M. Co., Tonopah, Checr.
 33721...Tonopah M. Auto Co., Tonopah, Loco.
 33722...Ton. M. Co. of Nev., Tonopah, Mitchell.
 33723...Ton. M. Co. of Nev., Tonopah, Hup.
 33724...Ton. M. Co. of Nev., Tonopah, Winton.
 33725...Mrs. E. H. Scott, Mason, Ford.
 33726...B. F. Curler, Elko, Buick.
 33727...L. Rivera, Reno, Overland.
 33728...J. S. Jones, Austin, Ford.
 33729...Minden Flour Mill Co., Minden, Kleiber.
 33730...Oscar Shellman, Reno, Ford.
 33731...Jas. Farrell, Wabuska, Chevrolet.
 33732...Mrs. May Smith, Wabuska, Ford.
 33733...E. F. Feticc, Genoa, Ford.
 33734...I. D. McNett, Dyer, Ford.
 33735...W. A. Kent, Contact, Dodge.
 33736...J. A. Bielar, Carlin, Ford.
 33737...H. R. Goff, Battle Mountain, Ford.
 33738...Frank Phillips, Carlin, Ford.
 33739...U. S. Dept. Agriculture, Fallon, Ford.
 33740...Phil Hurney, Wells, Ford.
 33741...Louis Heidtman, Sheridan, Studebaker.
 33742...E. J. Luce, McGill, Briscoe.
 33743...R. E. Pomeroy, McGill, Chandler.
 33744...C. W. Ayer, Reno, Ford.
 33745...Dr. A. Huffaker, Carson City, Buick.
 33746...A. W. Gonder, Wellington, Reo.
 33747...M. J. King, Silver City, Maxwell.
 33748...Mrs. P. H. Brewington, Reno Oakland.
 33749...Round Mt. M. Co., Rd. Mt., Dodge.
 33750...G. Bellomimini, Reno, Overland.
 33751...H. R. Brinsmead, Reno, Overland.
 33752...Copper Can. M. Co., Battle Mtn., Dodge.
 33753...Copper Can. M. Co., Battle Mtn., Stude.
 33754...Copper Can. M. Co., Battle Mtn., Ford.
 33755...Copper Can. M. Co., Battle Mtn., Pack.
 33756...C. W. Myers, Seven Trougs, Buick.
 33757...Mrs. Frank Coffin, Hazen, Cadillac.
 33758...Geo. Fisher, Ely, Dodge.
 33759...Fred Thomas, Ely, Dodge.
 33760...W. T. Geraghty, Ely, Buick.
 33761...P. W. Smoot, Ely, Dodge.
 33762...M. T. Geraghty, Ely, Ford.
 33763...Jesse Thyberg, McGill, Ford.
 33764...P. Whelan, Kimberly, Buick.
 33765...Jack Maddafock, Ely, Ford.
 33766...E. F. Schultz, Ely, Ford.
 33767...C. A. Glover, Kimberly, Ford.
 33768...Wm. Curto, Ely, Ford.
 33769...Geo. Box, Ely, Ford.
 33770...Chas. Demarchi, Ely, Ford.
 33771...James May, Sparks, Dodge.
 33772...Fred Stephens, Sparks, Overland.
 33773...F. A. Anderson, Sparks, Ford.
 33774...M. Z. Lacking, Sparks, Overland.
 33775...T. H. Delano, Sparks, Howard.
 33776...Claude T. Hower, Sparks, Dort.
 33777...Joe Apparan, Reno, Hudson.
 33778...G. Petriciani, Reno, Haynes.
 33779...J. W. Jones, Pyramid, Studebaker.
 33780...Mathews Cash Grocery, Reno, Ford.
 33781...L. E. Richter, Reno, Maxwell.
 33782...H. O. Hansen, Mason, Overland.
 33783...D. P. Curto, Ely, Ford.
 33784...John G. Kitchen, Eureka, Chevrolet.
 33785...Frank Schruett, Ruth, Chevrolet.
 33786...J. W. Grossman, Ruth, Chevrolet.
 33787...William Scossa, Mason, Overland.
 33788...Frank S. Connors, Elko, Buick.
 33789...W. A. Larson, Fallon, Ford.
 33790...J. B. Ferguson, Fallon, Buick.
 33791...Ed. Coyle, Duckwater, Ford.
 33792...Robert S. Copeland, McGill, Ford.
 33793...Frank Grow, Osceola, Ford.
 33794...W. W. Paterson, Ely, Ford.
 33795...M. V. Clay, Osceola, Ford.
 33796...J. Rodrigues, Ely, Cadillac.
 33797...W. Rogers, Cleveland Ranch, Overland.
 33798...Wm. Ackerman, Ely, Case.
 33799...F. L. Pierce, Cherry Creek, Ford.
 33800...F. L. Pierce, Cherry Creek, Ford.
 33801...Farmers Coop. Merc. Co., Minden, Fd.
 33802...R. A. Nuckols, Cherry Creek, Ford.
 33803...Mrs. Cora N. Dixon, Ely, Ford.
 33804...T. F. Plummer, Eureka, Dodge.
 33805...N. P. Morgan, Eureka, Dodge.
 33806...L. H. Zimmerman, McGill, Oldsmobile.
 33807...Stall Bros., Goconda, Ford.
 33808...F. E. Leonard, Beowawe, Dodge.
 33809...Beowawe Merc. Co., Beowawe, Ford.
 33810...Barney Chieorp, Reno, Buick.
 33811...Julius C. Byers, Reno, Oakland.
 33812...J. P. Jacobsen, Eureka, Ford.
 33813...Geo. W. Selby, Genoa, Ford.
 33814...A. Simday, Carson City, Ford.
 33815...P. Capurro, Reno, Haynes.

- 33816...R. H. Pooley, Goldfield, Buick.
 33817...Della M. Lewis, Tonopah, Hudson S. 6.
 33818...W. B. Gray, Beatty, Willys-Knight.
 33819...Branch H. Smith, Tonopah, Hupmobile.
 33820...Carson Water Co., Carson City, Ford.
 33821...Chas. L. Young, Tonopah, Ford.
 33822...F. Dumont, Tonopah, Overland.
 33823...W. H. Cavell, Carson City, Oldsmobile.
 33824...Wonacott & Cavanaugh, Tonopah, Sax.
 33825...Wonacott & Cavanaugh, Tonopah, Mich.
 33826...S. L. Netherton, Yerington, Overland.
 33827...M. H. Kuhn, Reno, Ford.
 33828...A. W. Walters, Gardnerville, Maxwell.
 33829...Geo. W. Robinson, Reno, Cadillac.
 33830...Pahrump Valley Co., Pahrump, Ford.
 33831...J. E. Sollenberger, Reno, Ford.
 33832...D. J. Park, Gardnerville, Ford.
 33833...David Fife, Bruner, Hupmobile.
 33834...S. A. Hall, Fallon, Ford.
 33835...Harry F. Kendall, Fallon, Chevrolet.
 33836...C. I. Graves, Fallon, Ford.
 33837...John B. Cavin, Fallon, Buick.
 33838...Nicholas G. Jesch, Northam, Reo.
 33839...P. R. Himes, Las Vegas, Ford.
 33840...H. M. Fisel, Lamolite, Chevrolet.
 33841...Nels Anderson, Elko, Overland.
 33842...Stewart Mining Co., Elko, Dodge.
 33843...J. B. Case Co., Paradise Val., Ato Car.
 33844...C. C. Higgins, Rochester, Ford.
 33845...Dave Gardella, Fort Churchill, Maxwell.
 33846...James Bett, Bullion, Ford.
 33847...Paul L. Winstead, Lee, Buick.
 33848...L. A. Friedman, Lovelock, Buick.
 33849...A. E. Springler, Inlay, Dodge.
 33850...Joe Garavanta, Wadsworth, Buick.
 33851...J. B. Daniel, Lovelock, Oakland.
 33852...Henry Larson, Lovelock, Ford.
 33853...L. M. Christensen, Reno, Maxwell.
 33854...Mrs. S. H. Wheeler, Reno, Scripps-B.
 33855...W. L. Bewich, Reno, Ford.
 33856...J. D. Mariner, Reno, Dort.
 33857...F. T. Ritchheart, Fallon, Ford.
 33858...L. C. Weaver, Fallon, Ford.
 33859...O. J. Leet, Fallon, Ford.
 33860...Paul Kolstrup, Fallon, Dort.
 33861...Theo. Omundson, Fallon, Ford.
 33862...J. P. Sagoussie, Fallon, Buick.
 33863...Elmer Tow, Fallon, Dodge.
 33864...W. R. McCuiston, Fallon, Dodge.
 33865...Mrs. A. B. Addenbrooke, Reno, Stude.
 33866...Colorado Grocery, Reno, Ford.
 33867...Colorado Grocery, Reno, Ford.
 33868...Colorado Grocery, Reno, Ford.
 33869...John Herr, Reno, Studebaker.
 33870...W. J. Gostin, Tonopah, Oldsmobile.
 33871...Ed F. Dunbar, Fallon, Oldsmobile.
 33872...W. F. Bannels, Reno, Dodge.
 33873...Frank Pecetti, Reno, Dodge.
 33874...Mrs. J. L. Pechetto, Reno, Dodge.
 33875...A. P. Pincolini, Reno, Overland.
 33876...W. T. Poindexter, Reno, Hudson.
 33877...S. B. & L. S. Doten, Reno, Ford.
 33878...Geo. Robinson, Sparks, Buick.
 33879...Haas Bros., Reno, Dodge.
 33880...George A. Manson, Currant, Ford.
 33881...W. F. Mendes, Currant, Reo.
 33882...W. T. Kennedy, Berlin, Ford.
 33883...J. D. Montgomery, Tonopah, Ford.
 33884...A. S. Kline, Reno, Ford.
 33885...E. J. W. Marble, Reno, Reo.
 33886...Mrs. A. B. Lee, Sparks, Dorris.
 33887...R. R. Robinson, Fallon, Chevrolet.
 33888...Fritz Elges, Mina, Hudson 6.
 33889...John W. Scott, Carlin, Ford.
 33890...A. F. Branch, Fallon, Buick.
 33891...Santiago Burgetti, Fallon, Chevrolet.
 33892...Chauncey W. Smith, Fallon, Ford.
 33893...Frank Winchell, Wells, Ford.
 33894...Dr. P. H. Phillips, Reno, National.
 33895...L. C. Shookie, Reno, Ford.
 33896...E. W. Chism, Reno, Buick.
 33897...Chism Ice Cream Co., Reno, Ford.
 33898...Chism Ice Cream Co., Reno, Ford.
 33899...Chism Ice Cream Co., Reno, Ford.
 33900...Mrs. Earl S. Cobb, Palisade, Ford.
 33901...C. J. Fairchilds, Reno, Ford.
 33902...Peter Olson, Reno, Ford.
 33903...A. H. Albee, Reno, Ford.
 33904...Royal Laundry Co., Reno, Ford.
 33905...Royal Laundry Co., Reno, Ford.
 33906...J. H. Christensen, Reno, Ford.
 33907...C. J. Fairchilds, Reno, Ford.
 33908...Mrs. A. E. Dunn, Reno, Buick.
 33909...Thos. W. Lewis, Winnemucca, Ford.
 33910...Utah Construction Co., Platora, Ford.
 33911...Ben B. Inamassa, Winnemucca, Ford.
 33912...F. J. Button, Winnemucca, Ford.
 33913...R. B. Thompson, Winnemucca, Ford.
 33914...L. C. Grigsby, Paradise, Ford.
 33915...N. J. Rolph, Winnemucca, Ford.
 33916...J. A. Thomsen, Winnemucca, Ford.
 33917...Joe Yragui, Winnemucca, Dodge.
 33918...A. E. Sykes, Winnemucca, Overland.
 33919...J. E. Southward, Winnemucca, Buick.
 33920...S. Siard, Winnemucca, Reo.
 33921...S. Siard, Winnemucca, Hup.
 33922...S. Siard, Winnemucca, Buick.
 33923...C. E. Cady, Montello, Ford.
 33924...W. J. Cremer, Reno, Buick.
 33925...G. E. McCracken, Carson City, Over.
 33926...D. Wennholdt, Gardnerville, Overland.
 33927...E. J. Phillips, Gardnerville, Overland.
 33928...Eugene Scossa, Sheridan, Buick.
 33929...Hans Johnson, Gardnerville, Overland.
 33930...Wm. Scheele, Gardnerville, Dodge.
 33931...L. Ruhenstroth, Gardnerville, Buick.
 33932...L. Ruhenstroth, Gardnerville, Buick.
 33933...N. D. Neddenriep, Minden, Oldsmobile.
 33934...L. M. Jacobsen, Gardnerville, Dodge.
 33935...Ernest Bockelman, Sheridan, Ford.
 33936...M. Christensen, Gardnerville, Ford.
 33937...Wm. Gansberg, Sheridan, Ford.
 33938...C. Anderson, Gardnerville, Overland.
 33939...Wick Wennholdt, Gardnerville, Ford.
 33940...Ethel Pope, Reno, Ford.
 33941...E. K. Fowler, Reno, Studebaker.
 33942...Wm. M. Hansen, Gardnerville, Ford.
 33943...W. H. Sanders, Reno, Ford.
 33944...W. E. Davis, Rand, Ford.
 33945...C. H. Barnard, Goldfield, Dodge.
 33946...Henry C. Neilson, Steamboat, Metz.
 33947...Tony Rossi, Cortez, Ford.
 33948...Mrs. W. E. Gorton, Fallon, Ford.
 33949...G. S. Simpson, Reno, Studebaker.
 33950...Rev. E. F. Jones, Reno, Ford.
 33951...Frank DeLay, Reno, Chalmers.
 33952...Rochester Mines Co., Reno, Liberty.
 33953...Perry Bush, Elko, Haynes.
 33954...J. A. Casey, Fallon, Ford.
 33955...Frank E. Gibbs, Elko, Ford.
 33956...James M. Ryan, Elko, Ford.
 33957...Mrs. Zeraugue, Reno, Chandler.
 33958...C. F. Johnson, Fallon, Dodge.
 33959...Jones & Jewell, Fallon, Ford.
 33960...A. R. Wainscott, Fallon, Maxwell.
 33961...Mrs. J. A. Calligan, Lovelock, Reo 5.
 33962...Louis Saroni, Wellington, Ford.
 33963...B. F. Branch, Sparks, Overland.
 33964...Martin Pradere, Reno, Buick.
 33965...James Davis, Fallon, Ford.
 33966...W. D. Warren, Ursine, Ford.
 33967...Frank E. Edwards, Panaca, Dodge.
 33968...W. C. Bowman, Bunkerville, Overland.
 33969...Frank L. Sellstrom, East Ely, Republic.
 33970...Robert Brady, Ely, Buick.
 33971...J. F. Wambolt, Geyser, Dodge.
 33972...Lewie Zadow, Ely, Dodge.
 33973...L. H. Murdock, Ely, Studebaker.
 33974...L. H. Murdock, Ely, Marmion.
 33975...Jos. Oxborrow, Lund, Ford.
 33976...L. Bodine, McGill, Ford.
 33977...Mary Evans, Ely, Ford.
 33978...S. H. Newton, Reno, Buick.
 33979...W. F. Shaw, Fallon, Ford.
 33980...J. W. Johnson, Fallon, Chevrolet.
 33981...M. Downey, Fallon, Maxwell.
 33982...W. G. Edwards, Reno, Chevrolet.
 33983...N. F. Peterson, Reno, Ford.
 33984...Clara D. Lewis, Reno, Oakland.
 33985...E. L. Cole, Verdi, Overland.
 33986...J. D. Granata, Reno, Maxwell.
 33987...A. L. Nugent, Reno, Ford.
 33988...C. S. Laughton, Reno, Reo.
 33989...C. H. Karns, Reno, Chevrolet.
 33990...Wm. T. Gustine, Pioche, Dodge.

- 38991...Bertha C. Knemeyer, Elko, Dodge.
 38992...Ralph Brown, Lee, Dodge.
 38993...Kerxes Martin, Lee, Dodge.
 38994...W. H. James, Carson City, Ford.
 38995...W. B. Alexander, Reno, Chevrolet.
 38996...T. M. English, Stewart, Reo.
 38997...F. T. Donnelly, Carson City, Ford.
 38998...C. A. Harris, Battle Mtn., Studebaker.
 38999...J. W. V. Banion, Reno, Ford.
 34000...Benj. J. Henley, Reno, Haynes.
 34001...Mrs. E. Starkey & Son, Keystone, Ford.
 34002...Geo. L. Dugan, Keystone, Ford.
 34003...Lee Bell, Tonopah, Buick.
 34004...Lee Bell, Tonopah, Overland.
 34005...P. H. Benson, Virginia, Ford.
 34006...A. Gradi, Virginia, Maxwell.
 34007...John Avanzini, Goldfield, Ford.
 34008...John Avanzini, Goldfield, Ford.
 34009...Martin Mirande, Mason, Overland.
 34010...H. Timms, Mina, Buick.
 34011...Jacob C. Meyer, Reno, Dodge.
 34012...C. D. Ridenour, Reno, Ford.
 34013...Wm. Wilson, Nordsyke, Dort.
 34014...Louis Valerdi, Vya, Oldsmobile.
 34015...James McEntee Candelaria, Ford.
 34016...Chas. E. Noble, Mina, Ford.
 34017...West Tonopah M. Co., Tonopah, Ford.
 34018...S. L. Rogantini, Duckwater, Ford.
 34019...W. J. Tobin, Pioneer, Chandler.
 34020...John Manson, Duckwater, Ford.
 34021...Nev. Tel-Tel. Co., Tonopah, Ford.
 34022...Nye County, Tonopah, Ford.
 34023...A. S. Olds, Goldfield, Buick.
 34024...E. J. Erickson, Tonopah, Hudson.
 34025...R. A. McClelland, Ludwig, Ford.
 34026...M. G. Myrtle, Goldfield, Ford.
 34027...G. H. Cook, Goldfield, Ford.
 34028...Dr. B. J. Baker, Yerington, Dodge.
 34029...Tony Farias, Wabaska, Overland.
 34030...Almardo Fenili, Yerington, Buick.
 34031...W. J. Freeman, Yerington, Dodge.
 34032...Ed. Springmeyer, Gardnerville, Dodge.
 34033...Ed. Springmeyer, Gardnerville, Buick.
 34034...Ruel E. Lothrop, Yerington, Ford.
 34035...Cameron & Hart, Belmont, Dodge.
 34036...L. J. Edwards, Manhattan, Chevrolet.
 34037...J. F. White, Tonopah, Stevens-Dur.
 34038...Mrs. G. Millett, Round Mtn., Maxwell.
 34039...E. E. Southworth, Manhattan, Ford.
 34040...John J. Timlin, Tonopah, Ford.
 34041...Sam Best, Dyer, Ford.
 34042...W. C. Cardinal, Belmont, Ford.
 34043...E. E. Taillier, Wabaska, Ford.
 34044...Molini Bros., Dyer, Studebaker.
 34045...John Buser, Dyer, Ford.
 34046...Round Mtn. M. Co., Rd. Mtn., Pope-H.
 34047...J. Mortis, Lovelock, Buick.
 34048...Carl Stoddard, Reno, Ford.
 34049...Mayer Hotel Co., Elko, Chandler.
 34050...J. F. Klaner, Elko, Studebaker.
 34051...H. G. Hay, McGill, Chevrolet.
 34052...Chas. Chester, Ely, Ford.
 34053...Webster Patterson, Elko, Stutz.
 34054...A. W. Goble, Wells, Ford.
 34055...Wm. Kane, Wells, Ford.
 34056...Jack Frost (Indian), Ruby Valley, Fd.
 34057...C. Schoer, Wells, Dodge.
 34058...W. S. Raine, Palisade, Buick.
 34059...Wm. K. Howe, Reno, Studebaker.
 34060...Geo. Babcock, Sparks, Ford.
 34061...Geo. Grosse, Reno, Maxwell.
 34062...C. H. Meeker, Sparks, Buick.
 34063...I. D. McCormick, Sparks, Chevrolet.
 34064...Herminia Schriber, Wendover, Buick.
 34065...Dean Ranch, Beowawe, Ford.
 34066...Dean Ranch, Beowawe, Ford.
 34067...Wilson Bates Furn. Co., Ely, Ford.
 34068...O. G. Bates, Ely, Buick.
 34069...Wilson Bates F. Co., Ely, Continental.
 34070...Wilson Bates F. Co., Ely, Jeffrey.
 34071...Jas. H. Clifford, Tonopah, Case.
 34072...Acme Con. M. E. Co., Schellbourne, Fd.
 34073...William Chinn, McGill, Ford.
 34074...R. D. Chambers, Ely, Ford.
 34075...James V. Comerford, Ely, Ford.
 34076...Albert E. Williams, Preston, Ford.
 34077...Mrs. L. Zunino, Ely, Maxwell.
 34078...J. H. Dever, Ely, Dodge.
 34079...F. D. Oldfield, Ely, Hupmobile.
 34080...F. D. Oldfield, Ely, Oldsmobile.
 34081...Arthur Knecht, Ely, Dodge.
 34082...Levy H. Irwin, Las Vegas, Buick.
 34083...Alex Ranson, Reno, Chevrolet.
 34084...Walter H. Robinson, Reno, Briscoe.
 34085...Chas. S. Crosby, Reno, Chandler.
 34086...Ed. Thornton, Fallon, Ford.
 34087...Harley Enlow, Fallon, Ford.
 34088...John Oats, Fallon, Oldsmobile.
 34089...H. A. Paulsen, Fallon, American.
 34090...F. A. Harrigan, Fallon, Ford.
 34091...Frank Partorino, Ely, Ford.
 34092...H. E. Magruder, Ely, Ford.
 34093...W. L. Jones, Overton, Ford.
 34094...P. Baugh, Battle Mtn., Buick.
 34095...Charley Mitchell, Elko, Oldsmobile.
 34096...Charley Mitchell, Elko, Cadillac.
 34097...Mrs. N. Crumley, Jarbridge, Willys-K.
 34098...Thos. B. Wheeler, Baker, Ford.
 34099...Lloyd E. Ginter, McGill, Ford.
 34100...Jno. J. Hunter, Elko, Oldsmobile.
 34101...Edw. M. Bordwell, Ruth, Chevrolet.
 34102...J. L. Whipple, Sunnyside, Studebaker.
 34103...J. E. Milne, Ely, Reo.
 34104...Miss Dolly Lane, Ely, Stearns.
 34105...E. F. Mendes, Jr., Currant, Ford.
 34106...Thos. F. McGeary, Duckwater, Ford.
 34107...Herbert E. Tait, Reno, Reo.
 34108...Sam Hagans, Cherry Creek, Ford.
 34109...Geo. F. Hermann, Reno, Buick.
 34110...John P. Williams, Clark, Chandler.
 34111...John P. Williams, Clark, Overland.
 34112...Frank J. Byington, Reno, Ford.
 34113...Verdi Lumber Co., Reno, Ford.
 34114...R. H. Knight, Amos, Ford.
 34115...Albert Trescartes, Lamille, Ford.
 34116...Dan J. Riordan, Lee, Reo.
 34117...Joe Pattam, Tuscarora, Studebaker.
 34118...Douglass Renfro L. Co., Fallon, Buick.
 34119...Otto Richter, Fallon, Dort.
 34120...Mrs. C. M. Barton, Clover City, Ford.
 34121...Roy Haslett, Red House, Overland.
 34122...P. H. Green, Cherry Creek, Ford.
 34123...A. Sala, Franktown, Chevrolet.
 34124...W. D. Knight, Carson City, Ford.
 34125...J. N. Stewart, Reno, Ford.
 34126...Grace Sprague, Carson City, Maxwell.
 34127...Mrs. L. B. McCabe, Carson, Chalmers.
 34128...C. T. Mullins, Reno, Cadillac.
 34129...Mrs. Daisy Clawson, Reno, Ford.
 34130...S. F. Prouty, Reno, Buick.
 34131...H. A. Lancaster, Mason, Chevrolet.
 34132...James H. Rowe, Thompson, Dodge.
 34133...J. H. Stodick, Gardnerville, Lexington.
 34134...W. G. Walker, Tonopah, Ford.
 34135...Arthus Alley, Dyke via Amos, Ford.
 34136...A. Devere, Carlin, Chevrolet.
 34137...Willard Morgan, Battle Mtn., Ford.
 34138...W. D. Moody, Fallon, Cadillac.
 34139...W. R. Robrecht, Reno, Ford.
 34140...W. R. Robrecht, Reno, Ford.
 34141...W. R. Robrecht, Reno, Overland.
 34142...Lucy C. Gilpin, Sparks, Buick.
 34143...D. H. Bruce, Reno, Ford.
 34144...C. W. Nelson, Reno, Ford.
 34145...Parker Liddell, Reno, Ford.
 34146...John Chism, Reno, Haynes.
 34147...John Chism, Reno, Ford.
 34148...John Chism, Reno, Federal.
 34149...F. S. Jones, Sparks, Maxwell.
 34150...P. W. Merrill, Battle Mtn., Chevrolet.
 34151...Frank Fernald, Sr., Elko, Dodge.
 34152...W. M. Staley, Sparks, Chevrolet.
 34153...Donald R. Fraser, Reno, Ford.
 34154...F. W. Inman, Fallon, Franklin.
 34155...W. H. Gibbs, Fallon, Franklin.
 34156...C. M. Hoover, Fallon, Ford.
 34157...C. W. Kinney, Fallon, Ford.
 34158...Chas. S. Fitzsimmons, Mason, Dodge.
 34159...A. B. Gardner, Sunnyside, Oldsmobile.
 34160...William Hughes, Reno, Overland.
 34161...Laura Hoegh, Eureka, Ford.
 34162...F. Feldman, Winnemucca, Studebaker.
 34163...J. Schas, McDermitt, Losier.
 34164...Dr. E. D. Giroux, Winnemucca, Buick.

- 34165...J. B. Clough, Winnemucca, Overland.
 34166...Adrian Bernard, Winnemucca, Ford.
 34167...W. F. Cogswell, Winnemucca, Ford.
 34168...S. A. Dedman, Winnemucca, Ford.
 34169...L. O. Lundy, Winnemucca, Ford.
 34170...H. H. Alexander, Junco, Ford.
 34171...A. Bohnert, Winnemucca, Ford.
 34172...Mrs. G. A. Becker, Winnemucca, Ford.
 34173...A. E. Boggs, Las Vegas, Ford.
 34174...R. T. Morgan, Las Vegas, Ford.
 34175...W. C. Bright, Desert, Calif., Overland.
 34176...Bordoli Bros., Sharp, Ford.
 34177...J. H. Hammond, Jr., Urine, Dodge.
 34178...Peter Organ, Mill City, Dodge.
 34179...Mrs. H. F. Davidson, Mill City, Ford.
 34180...W. H. Austin, Fernley, Chevrolet.
 34181...Alice R. Austin, Fernley, Ford.
 34182...J. W. Freeman Co., Stillwater, Ford.
 34183...J. W. Freeman Co., Stillwater, Oldsmo.
 34184...Victor Jacobsen, Midas, Buick.
 34185...W. L. Semenza, Reno, Willys-Knight.
 34186...S. Jacobs, Reno, Overland.
 34187...George Banks, Elko, Overland.
 34188...J. J. Thurston, Montello, Buick.
 34189...H. P. Davis, Montello, Buick.
 34190...G. W. Bonney, Fernley, Reno.
 34191...Asa A. Gourley, Mill City, Buick.
 34192...Chris. Matovitch, Packard, Ford.
 34193...F. W. Chichester, Smith, Ford.
 34194...L. H. Taylor, Reno, Dodge.
 34195...S. H. Brady & Co., Reno, Reo.
 34196...B. H. Briggs, Yerington, Chevrolet.
 34197...R. C. Thompson, Reno, Maxwell.
 34198...Mrs. A. Andrews, Hawthorne, Dodge.
 34199...Dr. G. C. Steinmiller, Reno, Cadillac.
 34200...Graham Sanford, Reno, Cadillac.
 34201...R. C. Allen, Thompson, Ford.
 34202...C. J. Monahan, Mason, Ford.
 34203...Mrs. R. L. Waggoner, Yerington, Over.
 34204...Ambro Rosaschi, Yerington, Dorris.
 34205...Eddie Gallagher, Yerington, Buick.
 34206...Harry Dunseath, Tonopah, Ford.
 34207...Jerry Borolo, Goldfield, Ford.
 34208...Chatom & Vignolo, Beatty, Ford.
 34209...John Cyty, Rhyolite, Mercer.
 34210...Chas. P. Mackey, Tonopah, Buick.
 34211...A. H. Jones, Tonopah, Packard.
 34212...Wm. Dawe, Tonopah, Ford.
 34213...C. M. Bradner, Tonopah, Crow-Elkhart.
 34214...Antone Glock, Gardnerville, Ford.
 34215...J. W. Doyle, Searchlight, Ford.
 34216...Harry Boney, Reno, Overland.
 34217...R. L. Morris, Reno, Ford.
 34218...Chas. G. Taylor, Reno, Chandler.
 34219...C. A. Nagler, Reno, Oakland.
 34220...D. W. Ridenour, Reno, Dodge.
 34221...C. R. Swobe, Reno, Overland.
 34222...C. R. Swobe, Reno, Overland.
 34223...A. P. Ceander, Reno, Ford.
 34224...A. P. Ceander, Reno, Oakland.
 34225...H. G. Knight, Tonopah, Ford.
 34226...Floyd O. Booe, Carson City, Overland.
 34227...H. E. Hillygus, Mason, Dodge.
 34228...R. C. Miller, Mina, Ford.
 34229...Alex. Forkapich, Mina, Ford.
 34230...F. L. Gora, Goldfield, Overland.
 34231...J. P. Prazzo, Wabuska, Stephens.
 34232...Elmer Hanson, Yerington, Dodge.
 34233...G. W. Martin, Yerington, Overland.
 34234...Morris Glomi, Yerington, Ford.
 34235...T. J. Bell, Austin, Saxon.
 34236...F. V. McAvoy, Reno, Cadillac.
 34237...Thomas P. Hunter, Reno, Overland.
 34238...Jas. G. Peckham, Reno, Ford.
 34239...Geo. A. Peckham, Reno, Cadillac.
 34240...Ed. G. Cupit, Belmont, Chandler.
 34241...Anna Hellwinkel, Gardnerville, Jackson.
 34242...Irene E. Gray, Carson City, Chevrolet.
 34243...A. B. Karns, Carson City, Ford.
 34244...John Uhart, Carson City, Haynes.
 34245...Mrs. J. I. Allenbach, Reno, Studebaker.
 34246...A. J. Hanton, Sparks, Overland.
 34247...Domingo Calsacorta, Elko, Studebaker.
 34248...R. M. Woodward, Tuscarora, Dodge.
 34249...D. Pecetto, Las Vegas, Studebaker.
 34250...R. L. Henry, McGill, Ford.
 34251...Harry Ernest, Goldfield, Ford.
 34252...Con. Copper M. Co., Kimberly, Dodge.
 34253...Albert Tilton, Battle Mountain, Ford.
 34254...Albert Tilton, Battle Mtn., Moreland.
 34255...Frank Jeanney, Wells, Chevrolet.
 34256...B. M. Shelly, Sparks, Ford.
 34257...F. M. Kenkle, Sparks, Ford.
 34258...E. D. Loveridge, McGill, Ford.
 34259...Frank Snyder, Ely, Ford.
 34260...C. A. Kixmiller, Pioche, Ford.
 34261...O. Canfield, Montello, Cadillac.
 34262...E. F. Remusat, Golconda, Elgin.
 34263...A. C. Grindling, Battle Mtn. Ford.
 34264...Mrs. L. Miltonberger, Reno, Studebaker.
 34265...F. A. McCafferty, Reno, Ford.
 34266...Edwards Hardware Co., Reno, Haynes.
 34267...Edwards Hardware Co., Reno, Ford.
 34268...W. W. Elkins, Reno, Ford.
 34269...John B. Field, Reno, Buick.
 34270...V. Fulkerson, Fallon, Willys-Knight.
 34271...True Vencill, Fallon, Buick.
 34272...C. McClure, Fallon, Franklin.
 34273...Henry Fallon, Fallon, Ford.
 34274...Wm. Balgoyan, Fallon, Chevrolet.
 34275...J. H. Johnston, Fallon, Ford.
 34276...Stanley G. Palmer, Reno, Oakland.
 34277...W. Eagleson, Reno, Buick.
 34278...C. B. Elderkin, Reno, Studebaker.
 34279...Geo. A. Allerman, Reno, Ford.
 34280...Wm. Woodburn, Reno, Reo.
 34281...C. E. Goodpasture, McGill, Maxwell.
 34282...Joe Graglia, Las Vegas, Dodge.
 34283...Della McGriff, Las Vegas, Ford.
 34284...Sherman Clay & Co., Reno, Ford.
 34285...John C. Thornton, Unionville, Ford.
 34286...Wm. Stuart, Fernley, Ford.
 34287...Chas. F. Burd, Fernley, Dodge.
 34288...James R. Sullivan, Reno, Ford.
 34289...Dr. J. B. Hardy, Reno, Buick.
 34290...M. E. Cafferata, Reno, Continental.
 34291...Jos. B. Ferretta, Reno, Mitchell.
 34292...A. C. Dandel, Reno, Ford.
 34293...Maxwell Adams, Reno, Studebaker.
 34294...H. L. Pond, Reno, Chevrolet.
 34295...O. F. Amburn, Reno, Oldsmobile.
 34296...W. H. Goodwin, Reno, Chalmers.
 34297...Edward W. Ralph, Reno, Ford.
 34298...S. H. Hegarty, Reno, Studebaker.
 34299...August Kaiser, Carson City, Ford.
 34300...Mrs. J. V. Ducey, Goldfield, Reo 6.
 34301...M. M. Murphy, Deeth, Overland.
 34302...E. C. Murphy, Deeth, Hudson 6.
 34303...C. H. Peters, Carson City, Oakland.
 34304...Parvin Jones, Carson City, Ford.
 34305...Wm. Kennet, Carson City, Studebaker.
 34306...William Graunke, Gardnerville, Dodge.
 34307...H. J. Vaughn, Carson City, Ford.
 34308...Lee Hawkins, Carson City, Ford.
 34309...H. T. Holley, Carson City, Maxwell.
 34310...P. F. Wilsier, Reno, Buick.
 34311...S. A. Merkle, Elko, Oldsmobile.
 34312...R. W. Merrill, McGill, Cole.
 34313...H. L. Hager, Midas, Willys-Knight.
 34314...Frank Smiley, Deeth, Dodge.
 34315...Frank Eaton, Battle Mountain, Hup.
 34316...H. E. Burch, Battle Mountain, Velle.
 34317...Al. B. Phillips, Beowawe, Ford.
 34318...Jack Steele, Reno, Studebaker.
 34319...R. N. Barnett, Reno, Jackson.
 34320...W. R. Hayes, Battle Mtn., Studebaker.
 34321...Wilber H. Smiley, Deeth, Ford.
 34322...Thos. V. Conner, Fallon, Ford.
 34323...S. F. Tallman, Reno, Ford.
 34324...S. F. Tallman, Reno, Maxwell.
 34325...H. L. Thomas, Reno, Buick.
 34326...E. F. Chessman, Reno, Hudson.
 34327...R. A. Burrows, Reno, Dodge.
 34328...F. G. Wallender, Sparks, Ford.
 34329...A. Settlemyer, Gardnerville, Jackson.
 34330...L. N. Andersen, Gardnerville, Kleiber.
 34331...P. J. Hickey, Gardnerville, Buick.
 34332...Fritz Cordes, Gardnerville, Overland.
 34333...Helen Mav Huskey, Reno, Hudson.
 34334...Fred W. Brenzel, Gardnerville, Buick.
 34335...A. Settlemyer, Gardnerville, Ford.
 34336...H. H. Boone, Gardnerville, Overland.
 34337...G. G. Russell, Gardnerville, Ford.
 34338...H. F. Baker, Gardnerville, Ford.

- 34389...Fritz Cordes, Gardnerville, Overland.
 34340...Herman Tholke, Gardnerville, Ford.
 34341...C. E. Noble, Lamolite, Studebaker.
 34342...C. H. Black, Deeth, Studebaker.
 34343...Mrs. Paul Gudici, Elko, Studebaker.
 34344...S. B. Smart, Fallon, Dodge.
 34345...Thomas Dolf, Fallon, Hudson.
 34346...Thomas Dolf, Fallon, Overland.
 34347...G. W. Wender, Fallon, Chevrolet.
 34348...C. P. Whitney, Fallon, Dort.
 34349...O. H. Green, Fallon, Ford.
 34350...Ben Bianchi, Yerington, Studebaker.
 34351...Robert Wood, Battle Mtn., Studebaker.
 34352...Roy W. Moore, Jean, Ford.
 34353...Geo. S. Spreyer, Fallon, Studebaker.
 34354...Robt. J. Martin, Fernley, Chevrolet.
 34355...H. E. Cahill, Sparks, Buick.
 34356...American Ore H. C. Co., Reno, Cadillac.
 34357...American Ore H. C. Co., Reno, Peerless.
 34358...American Ore H. C. Co., Reno, Garford.
 34359...A. E. Organ, Winnemucca, Overland.
 34360...J. R. Babb, Fallon, Ford.
 34361...V. E. Babb, Fallon, Ford.
 34362...C. E. Babb, Fallon, Saxon.
 34363...A. D. Dern, Winnemucca, Dodge.
 34364...A. M. Bellander, Baker, Studebaker.
 34365...A. Dressler, Carson City, Marmon.
 34366...Metropolis L. Co., Metropolis, Dodge.
 34367...Metropolis P. Co., Metropolis, Ford.
 34368...Metropolis Land Co., Metropolis, Ford.
 34369...C. E. Kelly, Gerlach, Overland.
 34370...E. F. Felts, Schurz, Dodge.
 34371...Horace Greeley, Schurz, Ford.
 34372...Wat Williams, Mason, Ford.
 34373...Union L. & C. Co., Deeth, Buick.
 34374...Milton B. Badt, Wells, National.
 34375...H. E. Gregory, Fallon, Stearns.
 34376...W. H. Parrish, Illipah, Buick.
 34377...J. A. Hyde, Goodsprings, Dodge.
 34378...Geo. L. Meacham, Goodsprings, Ford.
 34379...S. E. Merrill, Las Vegas, Ford.
 34380...Joe Banner, Bunkerville, Ford.
 34381...Harry S. Upson, Reno, Metz.
 34382...Mrs. M. J. Bewes, Wells, Dodge.
 34383...E. P. Haymond, Wells, Ford.
 34384...Con. Wagon & Mac. Co., Wells, Ford.
 34385...John Uhalde, Ely, Dodge.
 34386...G. Seldubchere, Ely, Dodge.
 34387...Nick Karras, McGill, Jeffrey.
 34388...Nick Karras, McGill, Mitchell 6.
 34389...Lew Pedlar, Ely, Ford.
 34390...E. P. Walters, Ely, Chevrolet.
 34391...Anna E. Birch, Currant, Hudson.
 34392...W. H. Oden, Reno, Overland.
 34393...Joe A. Brown, Reno, Ford.
 34394...A. Miller, Reno, Overland.
 34395...Pearl B. Karaus, Yerington, Ford.
 34396...Earl Danielson, Battle Mtn., Overland.
 34397...Downer Bros., Goldfield, Dodge.
 34398...Mrs. Nettie Sall, Gold Creek, Chevrolet.
 34399...J. W. Johnston, Deeth, Overland.
 34400...W. S. Burke, Steamboat, Hudson.
 34401...F. H. Bird, Elko, Hudson.
 34402...Dr. A. Parker Lewis, Reno, Mitchell.
 34403...Geo. R. Harrison, Sparks, Jackson.
 34404...Wm. G. Peters, Reno, Ford.
 34405...J. B. Scott, Rockland, GMC.
 34406...J. B. Scott, Rockland, Olds 8.
 34407...Floyd Cable, Goldfield, Buick.
 34408...White Pine E. Co., Cherry Creek, Ford.
 34409...Chas. Cobb, Currant, Ford.
 34410...A. Chasas, McGill, Republic.
 34411...Fred G. Baldwin, McGill, Dodge.
 34412...J. Henry Goodman, McGill, Studebaker.
 34413...W. C. Goodman, McGill, Chandler.
 34414...R. H. Holtzman, Ely, Oldsmobile.
 34415...R. H. Crump, Tonopah, Chevrolet.
 34416...Thomas Woodliff, Jr., Fallon, Hudson.
 34417...M. S. Brambley, Aurum, Ford.
 34418...A. Chasas, McGill, Ford.
 34419...Ely Lumber & Coal Co., Ely, Ford.
 34420...Ely Lumber & Coal Co., Ely, Ford.
 34421...Louis Yelland, Aurum, Ford.
 34422...Andrew Ghiggeri, Ely, Ford.
 34423...Thomas Kopas, McGill, Ford.
 34424...Stephoe Grocery Co., East Ely, Ford.
 34425...H. H. Stevenson, Ely, Maxwell.
 34426...J. E. Sellers, McGill, Paige.
 34427...W. H. McCracken, Ely, Dodge.
 34428...McGill Mines Co., McGill, Studebaker.
 34429...McGill Merc. Co., McGill, Commerce.
 34430...B. F. Thomas, Goldfield, Ford.
 34431...Stephen S. Clark, Tonopah, Ford.
 34432...Joe Dietz, Luning, Dodge.
 34433...Mrs. A. L. Luce, Ludwig, Overland.
 34434...W. G. Allum, Yerington, Ford.
 34435...Toney Kramer, Reno, Buick.
 34436...Albert A. Clute, Tonopah, Ford.
 34437...W. E. Coppersmith, Reno, Studebaker.
 34438...F. S. Lamberherson, Yerington, Chand.
 34439...John Thomas, Reno, Chevrolet.
 34440...A. Van Buren, Reno, Ford.
 34441...Bruce Sautler, Reno, Buick.
 34442...H. J. Amigo, Reno, Reo.
 34443...Mrs. Dan Woo, Reno, Maxwell.
 34444...Geo. B. Thatcher, Reno, Cadillac.
 34445...Mrs. Naomi Smith, Tonopah, Dorris.
 34446...J. H. Park, Sheridan, Overland.
 34447...L. W. Osborn, Yerington, Marian.
 34448...G. W. Morris, Reno, Ford.
 34449...R. L. Kemmel, Sparks, Chevrolet.
 34450...Jas. Lister, Battle Mountain, Ford.
 34451...John Ross, Yerington, Oakland.
 34452...Thomas Ross, Yerington, Dodge.
 34453...C. H. Weed, Reno, Dodge.
 34454...C. H. Weed, Reno, Buick.
 34455...C. H. Weed, Reno, Buick.
 34456...Jas. Dyaart, Elko, Oldsmobile.
 34457...Dan Mathews, Reno, Chevrolet.
 34458...Severino Viette, Reno, Reo.
 34459...E. E. Seyler, Manhattan, Ford.
 34460...Ralph Wardie, Tonopah, Dodge.
 34461...Jas. Goldworthy, Wellington, Oakland.
 34462...Phil Bisonett, Silver Peak, Ford.
 34463...E. R. Berg, Goldfield, Dodge.
 34464...W. H. Royston, Tonopah, Overland.
 34465...J. M. Butler, Tonopah, Ford.
 34466...Chas. F. Geyer, Tonopah, Chevrolet.
 34467...Mrs. Joe Stewart, Mina, Chalmers.
 34468...Walter W. Wells, Searchlight, Dodge.
 34469...F. L. Lathrop, Ash Meadows, Ford.
 34470...V. E. Hamlin, Goodsprings, Ford.
 34471...George E. Bates, Reno, Chevrolet.
 34472...F. M. Buol, Pahump, Ford.
 34473...C. E. Thrall, Reno, Reo.
 34474...J. H. Wigg, Reno, Ford.
 34475...Cremor Erickson Co., Goldfield, Ford.
 34476...Cremor Erickson Co., Goldfield, Ford.
 34477...Francis Hallahan, Tonopah, Ford.
 34478...E. W. Smith, Tonopah, Ford.
 34479...Divide Ext. Mg. Co., Tonopah, Ford.
 34480...S. M. Pickett, Reno, Haynes.
 34481...Mrs. W. F. Scarlett, Sparks, Overland.
 34482...John Monte, Wadsworth, Buick.
 34483...Frank Margrave, Reno, Reo.
 34484...R. T. Jenkins, Reno, Reo.
 34485...E. C. Golsil, M.D., Reno, Cadillac.
 34486...W. F. Leonard, Sparks, Maxwell.
 34487...J. A. Ryan, Imlay, Dort.
 34488...Mrs. Louise Cook, Fallon, Dort.
 34489...Victor Fitts, Fallon, Ford.
 34490...E. A. Howard, Fallon, Ford.
 34491...Dr. C. H. Lehmers, Fallon, Hudson 6.
 34492...Dr. C. H. Lehmers, Fallon, Hudson 6.
 34493...Frank L. Peterson, Pyramid, Ford.
 34494...A. L. Chappell, Reno, Chandler.
 34495...Standard Metal Co., Reno, Ford.
 34496...Standard Metal Co., Reno, Republic.
 34497...Ward Bros., Reno, Ford.
 34498...Ward Bros., Reno, Reo.
 34499...Ward Bros., Reno, Reo.
 34500...Ward Bros., Reno, Reo.
 34501...Ward Bros., Reno, Maxwell.
 34502...Firestone Tire & Rub. Co., Reno, Ford.
 34503...J. H. Kirchner, Reno, Dodge.
 34504...Gray, Reid, Wright Co., Reno, Ford.
 34505...Gray, Reid, Wright Co., Reno, Ford.
 34506...Gray Reid, Wright Co., Reno, Ford.
 34507...J. H. Gray, Reno, Reo.
 34508...George McKnight, Elko, Studebaker.
 34509...Alice Fehyew, Reno, Ford.
 34510...Mrs. Wm. Dieokman, Reno, Willys-O.
 34511...Lisle Jamison, Reno, Chevrolet.
 34512...Ideal Sand Co., Ely, Ford.

- 34513....Oscar E. West, Ely, Ford.
 34514....E. A. Beale, Ely, Ford.
 34515....Geo. Curt Bosnos, Ely, Overland.
 34516....G. W. Lewis, Ely, Hupmobile.
 34517....G. L. House, East Ely, Chandler.
 34518....W. F. Allard, Ely, Chevrolet.
 34519....J. P. Crawford, McGill, Ford.
 34520....J. P. Jeppesen, East Ely, Ford.
 34521....Leroy Lisenby, Kimberly, Mitchell.
 34522....A. J. Stevens, Ely, Buick.
 34523....Max Tannier, Lovelock, Ford.
 34524....W. S. Short, Lurline, Franklin.
 34525....E. E. Lutta, Lurline, Stutz.
 34526....E. P. Hearn, Reno, Overland.
 34527....Nevada Valley P. Co., Lovelock, Ford.
 34528....U. S. Indian Service, Schurz, Ford.
 34529....Wells Lbr. & Coal Co., Wells, Ford.
 34530....C. G. Hamilton, Silver City, Reno.
 34531....H. B. Beers, Minden, Buick.
 34532....R. A. Trimble, Silver City, Overland.
 34533....Chas. Fisher, Fallon, Chevrolet.
 34534....C. E. Fisk, Fallon, Ford.
 34535....Geo. M. Smitten, Fallon, Chevrolet.
 34536....W. H. Bell, Currant, Ford.
 34537....R. J. Kolstrup, Fallon, Hupmobile.
 34538....John S. Cort, Midas, Republic.
 34539....J. A. Damm, Lovelock, Chevrolet.
 34540....M. A. Bianchi, Beowawe, Overland.
 34541....Herman Davis, Reno, Cadillac.
 34542....W. C. Ebert, Reno, Jefferies.
 34543....F. J. Vincent, Reno, Lozier.
 34544....F. G. Bernd, Austin, Buick.
 34545....John Saxagne, Austin, Overland.
 34546....E. H. Beemer, Reno, Cadillac.
 34547....A. G. Caughlin, Reno, Dodge.
 34548....Norman Chatfield, Reno, Ford.
 34549....S. F. Petefish, Tonopah, Ford.
 34550....Paul Jones, Reno, Haynes.
 34551....Newton W. Jacobs, Reno, Buick.
 34552....Geo. L. Holly, Sparks, Studebaker.
 34553....Laurintz P. Lund, Reno, Cadillac.
 34554....P. A. Young, Indian Springs, Ford.
 34555....Russel Trathen, Reno, Ford.
 34556....Homestead Baking Co., Reno, Ford.
 34557....Homestead Baking Co., Reno, Ford.
 34558....W. F. McDonald, Reno, Ford.
 34559....Homestead Baking Co., Reno, Ford.
 34560....Miss M. M. Holmes, Reno, Hupmobile.
 34561....Pete P. Arena Co., Austin, Hudson.
 34562....Lou Litater, Austin, Overland.
 34563....Mrs. E. McCarty, Pioche, Overland.
 34564....Mrs. Wm. M. Kennedy, Verdi, Ford.
 34565....Larson & Pelose, Reno, Ford.
 34566....E. D. Frazzini, Fallon, Overland.
 34567....W. McKnight, Carson City, Chevrolet.
 34568....Ben D. Luce, Tonopah, Hudson.
 34569....Kawich Cattle Co., Goldfield, Ford.
 34570....A. Westfall, Lovelock, Reno.
 34571....J. D. Mason, Mason, Ford.
 34572....C. R. Catterson, Yerington, Ford.
 34573....Nevada Douglas Co., Ludwig, Ford.
 34574....N. C. Johnson, Wabuska, Ford.
 34575....Oscar McNeill, Yerington, Ford.
 34576....J. N. Ostrander, Hawthorne, Ford.
 34577....D. Gurr, Mason, Buick.
 34578....I. S. Dickson, Mason, Hupmobile.
 34579....Mason L. & C. Co., Mason, Ford.
 34580....L. M. Manzer, Tonopah, Ford.
 34581....J. C. Cowden, M.D., Tonopah, Maxwell.
 34582....William Parker, Tonopah, Ford.
 34583....John Zonker, Tonopah, Ford.
 34584....Chas. Kaurohat, Round Mtn., Dodge.
 34585....Wm. Foreman, Tonopah, Buick.
 34586....Mrs. J. E. Monahan, Tonopah, Hudson.
 34587....C. E. Gruber, Goldfield, Overland.
 34588....Henry G. Siebold, Sparks, Maxwell.
 34589....S. Ventura, Yerington, Overland.
 34590....Nat. Realty & Inv. Co., Tonopah, S-K.
 34591....Ernest Gallaway, Thompson, Ford.
 34592....Monitor V. L. & C. Co., Belmont, Hup.
 34593....Mrs. John F. Clifford, Tonopah, Dodge.
 34594....David Stevens, Millers, Paige.
 34595....Mrs. F. P. Carroll, Tonopah, Overland.
 34596....Elmer Burt, Goldfield, Overland.
 34597....Dr. Geo. P. Devine, Goldfield, Stude.
 34598....Reno Flour Mill Co., Reno, Garfield.
 34599....Reno Flour Mill Co., Reno, Cole 8.
 34600....Nevada Grocery, Reno, Ford.
 34601....Owen Dougherty, Tonopah, Ford.
 34602....Peter Pastorina, Preston, Ford.
 34603....Chas. Degiovanni, Reno, Overland.
 34604....W. B. Tavelle, Deeth, Ford.
 34605....J. F. Williams, Sparks, Oakland.
 34606....H. J. Sadler, Sherman, Buick.
 34607....Geo. B. Bain, Golconda, Reo.
 34608....Geo. A. Bain, Golconda, Chevrolet.
 34609....M. E. Morrison, Winnemucca, Buick.
 34610....Ed. Stock, Paradise, Studebaker.
 34611....L. G. Campbell, Winnemucca, Dodge.
 34612....W. L. Wilkinson, Winnemucca, Cadillac.
 34613....W. H. Springer, Winnemucca, Dodge.
 34614....Mrs. E. Johnson, Winnemucca, Oakland.
 34615....F. V. Kimber, Winnemucca, Buick.
 34616....N. J. Nelson, Inlay, Ford.
 34617....N. J. Nelson, Inlay, Ford.
 34618....A. F. Tronsdale, Winnemucca, Ford.
 34619....Ed. Knieke, Paradise, Ford.
 34620....Burge Bros., Paradise, Ford.
 34621....J. White, Winnemucca, Ford.
 34622....Joe Lorenzana, Winnemucca, Ford.
 34623....E. P. Stites, Winnemucca, Ford.
 34624....West End C. M. Co., Winnemucca, Olds.
 34625....Otto G. Baumann, Fallon, Ford.
 34626....D. D. Lucas, Fallon, Ford.
 34627....Earl Anderson, Fallon, Ford.
 34628....A. L. Strauss, Fallon, Ford.
 34629....Dan Zuccone, Elko, Chalmers.
 34630....W. E. Lemley, Winnemucca, Ford.
 34631....Pearce Bros., Winnemucca, Ford.
 34632....F. G. Clement, Reno, Overland.
 34633....R. B. Royer, Tonopah, Buick.
 34634....Nevada Con. Copper Co., McGill, Paige.
 34635....Clay Spr. C. Co., Indian Spr., Autocar.
 34636....Clay Springs C. Co., Indian Spr., Ford.
 34637....W. N. Homan, Moapa, Buick.
 34638....John Pico, Reno, Buick.
 34639....G. L. Dempsay, Fallon, Ford.
 34640....G. L. Dempsay, Fallon, Hollier.
 34641....Mrs. E. Garner, Ash Meadows, Briscoe.
 34642....Mrs. T. H. Green, Las Vegas, Cadillac.
 34643....Mrs. H. Casier, Currant, Ford.
 34644....Jas. Giannopoulos, McGill, Ford.
 34645....Jas. Giannopoulos, McGill, Ford.
 34646....Geo. F. Murphy, Ruth, Overland.
 34647....Jasper M. Fox, Shoshone, Chevrolet.
 34648....Geo. Korcic, Ruth, Chandler.
 34649....C. L. Richardson, McGill, Oakland.
 34650....R. Yelland, Cleveland Ranch, Maxwell.
 34651....Wm. T. Knight, McGill, Ford.
 34652....Rollen Gill, Lamolite, Studebaker.
 34653....Geo. Hennen, Lamolite, Studebaker.
 34654....Chas. Dressi, Elko, Studebaker.
 34655....Palace Market, Sparks, Ford.
 34656....Yutta Guffy, Sparks, Overland.
 34657....Mrs. J. A. Yocum, Sparks, Ford.
 34658....Mrs. Chas. Berthold, Sparks, Ford.
 34659....John A. Spiker, Unionville, Ford.
 34660....Shearer & Brown, Reno, Ford.
 34661....W. C. Abell, McGill, Ford.
 34662....Antonio Yzagurrie, Tippet, Ford.
 34663....W. F. Linebarer, Carlin, Ford.
 34664....C. W. Woodruff, Carlin, Ford.
 34665....Roy R. Woods, Montello, Studebaker.
 34666....G. Edgar Nesbitt, Hiko, Ford.
 34667....Otto Richter, Fallon, Dort.
 34668....B. F. Smith, Wonder, Ford.
 34669....Frank C. Hill, Fernley, Ford.
 34670....M. P. MacMillan, Reno, Reo.
 34671....E. W. Jones, Sparks, Overland.
 34672....E. Rey, Reno, Overland.
 34673....Alfred Charts, Carson City, Lexington.
 34674....Geo. P. Armstrong, Reno, Reo 6.
 34675....John J. Hozg, Mason, Ford.
 34676....H. L. Spencer, Rawhide, Republic.
 34677....H. L. Spencer, Rawhide, Studebaker.
 34678....Chas. W. Gafford, Rand, Ford.
 34679....Cyrus G. Johnson, Beatty, Overland.
 34680....J. E. Burch, Reatty, Saxon.
 34681....Dr. Wm. L. Shawk, Schurz, Overland.
 34682....Mrs. Al. McCoy, Goldfield, Chandler.
 34683....Meaglia & Alice, Tonopah, Overland.
 34684....J. F. Enkhuse, Reno, Buick.
 34685....Mrs. R. C. Dyer, Schurz, Overland.
 34686....Daniel Sumin, Battle Mtn., Ford.
 34687....R. D. Santana, Montello, Ford.
 34688....W. A. Lee, Battle Mountain, Dodge.

34689. F. W. Gundelach, Kimberly, Ford.
 34690. Jos. R. Tognoni, Duckwater, Dodge.
 34691. L. H. Huren, Kimberly, Ford.
 34692. J. C. Tognoni, Duckwater, Ford.
 34693. Charles M. Hunt, Las Vegas, Ford.
 34694. Hylton & Mentz, Deeth, Buick.
 34695. Wm. Keating, McGill, Ford.
 34696. Jos. Hill, Lovelock, Liberty.
 34697. Ed. Kingman, Reno, Dodge.
 34698. Jean Rovetti, Reno, Ford.
 34699. H. E. Saviers, Reno, Ford.
 34700. Geo. Brodikan, Carson City, Overland.
 34701. H. E. Saviers, Reno, Reno.
 34702. Carl A. Johnson, Reno, Overland.
 34703. Ed. Lamb, McGill, Haynes.
 34704. F. & C. Kitzmeyer, Carson City, Hud.
 34705. E. A. Duvivier, Valmy, Ford.
 34706. Steve Burns, Reno, Liberty.
 34707. A. T. Baumann, Fallon, Ford.
 34708. J. T. Water, McGill, Ford.
 34709. Anna E. Birch, Duckwater, Ford.
 34710. Claude C. Bowman, Ruth, Ford.
 34711. Geo. Nabeta, Ely, Dodge.
 34712. Jas. Doutre, Schellbourne, Oldsmobile.
 34713. Armand Reymond, Ely, National.
 34714. Steve Dautre, Aurum, Dodge.
 34715. Peter Serena, Rochester, Dodge.
 34716. C. & L. Arobic, Lovelock, Reo 4.
 34717. Geo. C. Stoker, Lovelock, Ford.
 34718. Geo. W. Wilkinson, Lovelock, Chevrolet.
 34719. E. Reinhart Co., Winnemucca, Stude.
 34720. Albert Weishaupt, Stillwater, Ford.
 34721. Mrs. M. B. Morgan, Wonder, Ford.
 34722. Alexander S. Prosky, Rawhide, Ford.
 34723. Thos. J. Flynn, Fallon, Ford.
 34724. May & John Lukey, Reno, Reo.
 34725. J. E. Pickard, Reno. Refer to No. 32233.
 34726. T. L. Sarman, Gardnerville, Pullman.
 34727. J. Dell'Aqua, Reno, Overland.
 34728. Walter G. Warren, Wabuska, Buick.
 34729. Walter E. Warren, Wabuska, Ford.
 34730. John G. Ede, Reno, Overland.
 34731. P. J. McCart, Washoe, Ford.
 34732. Mervyn M. Marker, Lovelock, Ford.
 34733. O. O. DeChene, Reno, Ford.
 34734. Will Beckley, Las Vegas, Hudson 6.
 34735. Hester Mayotte, Reno, Ford.
 34736. E. H. Harned, East Ely, Ford.
 34737. H. H. Bailey, Reno, Ford.
 34738. J. R. Noble, Nelson, Ford.
 34739. Chas. Labbe, Nelson, Ford.
 34740. F. E. Hawksworth, Tonopah, Cadillac.
 34741. J. D. Wright, Tonopah, Dodge.
 34742. John Wehr, Yerington, Buick.
 34743. Mrs. B. W. Craig, Sparks, Maxwell.
 34744. C. E. Maxwell, Fallon, Maxwell.
 34745. Scott Iser, Wellington, Ford.
 34746. A. L. Swanberg, Yerington, Stude.
 34747. F. C. Vanover, Duckwater, Ford.
 34748. Ton. Divide M. Co., Tonopah, Federal.
 34749. Ton. Divide M. Co., Tonopah, Ford.
 34750. Miss Anna Whitehead, Luning, Dodge.
 34751. H. H. Heywood, Manhattan, Federal.
 34752. Mrs. Owen Maris, Manhattan, Ford.
 34753. H. B. Nelson, Reno, Reo.
 34754. Mrs. Owen Maris, Manhattan, Ford.
 34755. Isadora Hoton, Tonopah, Dodge.
 34756. C. H. Rulison, Reno, Dodge.
 34757. Geo. Kennedy, Elko, Nash.
 34758. Geo. Kennedy, Elko, Ford.
 34759. Enos H. Jones, Reno, Overland.
 34760. J. B. Merimon, Reno, Studebaker.
 34761. F. T. Boyson, Reno, Pierce Arrow.
 34762. Hobart Mills Co., Lovelock, Buick.
 34763. Hobart Mills Co., Lovelock, Cadillac.
 34764. N. Block, Reno, Ford.
 34765. Chas. Kennedy, Goodsprings, Ford.
 34766. A. J. Robbins, Goodsprings, Dodge.
 34767. Aaron J. Davies, Goodsprings, Ford.
 34768. W. T. Jenkins Co., Battle Mtn., Ford.
 34769. Internat. P. Syn., Las Vegas, Dodge.
 34770. J. L. Campbell, Genoa, Studebaker.
 34771. Andrew Perriek, McGill, Studebaker.
 34772. T. L. Bright, Desert, Ford.
 34773. W. H. Brockbank, Reno, Overland.
 34774. D. Zolezzi, Reno, Buick.
 34775. E. E. Winters, Fallon, Chevrolet.
 34776. Harry M. Carter, Fallon, Maxwell.
 34777. Bennetti Bros., Sparks, Ford.
 34778. Bennetti Bros., Sparks, Dodge.
 34779. E. L. Bickford, Sparks, Ford.
 34780. Mary E. Mackdon, Lovelock, Reo 5.
 34781. Karl O. Offers, Lovelock, Lozier.
 34782. Morris P. Kirk, Goodsprings, Cadillac.
 34783. Yellow Pine M. Co., Goodsprings, Cad.
 34784. J. H. Arthur, Fallon, Ford.
 34785. Arthur & Stratford, Fallon, Ford.
 34786. Arthur Perkins, Winnemucca, Ford.
 34787. G. B. Stannard, Hawthorne, Hupmo.
 34788. Ed. Lappott, Rand, Chevrolet.
 34789. R. J. Smith, Carson City, Ford.
 34790. Dr. S. S. Jarrett, Carson City, Maxwell.
 34791. J. H. Scinger, Reno, Ford.
 34792. Mrs. M. M. Jackson, Reno, Studebaker.
 34793. Standard Oil Co., Battle Mtn., Republic.
 34794. Standard Oil Co., Battle Mtn., Ford.
 34795. Standard Oil Co., Reno, White.
 34796. John Bradford, Death Valley, Overland.
 34797. S. D. Riley, Paradise, Ford.
 34798. O'Toole Bros., Austin, Dodge.
 34799. Jas. Hay, Lovelock, Ford.
 34800. Angie St. George, McGill, Dort.
 34801. Frank Cliff, Carson City, Chevrolet.
 34802. A. Randle, Baker, Ford.
 34803. N. G. P. Lawton, Reno, Studebaker.
 34804. Hyde Wilcox, Osceola, Studebaker.
 34805. Mike Borta, Kimberly, Federal.
 34806. Mike Borta, Kimberly, Oakland.
 34807. Mrs. S. M. Campbell, Ely, Chevrolet.
 34808. Ernie Best, Ely, Buick.
 34809. F. S. Gunter, Sparks, Dodge.
 34810. R. L. Read, Ely, Overland.
 34811. R. S. Methoin, Cedarville, Cal., Ford.
 34812. Leon T. Cirac, Stillwater, Ford.
 34813. Robert Arthur, Sparks, Thomas Flier.
 34814. Phillip Curti, Reno, Reo.
 34815. E. J. Lyng, Elko, Erie.
 34816. Merkey & Young, Jiggs, Chandler.
 34817. Geo. English, Caliente, Ford.
 34818. J. A. Gomes, Golconda, Republic.
 34819. Nev. School of Industry, Elko, Ford.
 34820. J. W. Weathers, Deeth, Oldsmobile.
 34821. J. W. Weathers, Deeth, Ford.
 34822. O'Neil Bros., Wells, Ford.
 34823. O'Neil Bros., Wells, Packard.
 34824. O'Neil Bros., Wells, Packard.
 34825. L. W. Mescher, Las Vegas, King 8.
 34826. Isaac Landis, Las Vegas, Garford.
 34827. U. S. Indian Service, Moapa, Ford.
 34828. Carl Olsen, Twin Springs, Maxwell.
 34829. W. F. Burzy, Twin Springs, GMC.
 34830. W. F. Burzy, Twin Springs, Ford.
 34831. Monarch Pitts. M. Co., Tonopah, Ford.
 34832. Dr. S. L. Jaslin, Fernley, Ford.
 34833. John S. Short, Reno, Hupmobile.
 34834. Chester Dormio, Reno, Ford.
 34835. Chester Dormio, Reno, Studebaker.
 34836. C. B. Staup, Fallon, Ford.
 34837. Martin Hasquett, Eureka, Dodge.
 34838. John Ardans, Eureka, Dodge.
 34839. John Ventorino, Eureka, Ford.
 34840. A. C. Florio, Eureka, Ford.
 34841. Vernon G. Clark, Ruth, Ford.
 34842. W. R. Gann, Logandale, Ford.
 34843. Clarence Young, Reno, Ford.
 34844. B. Lohiday & Co., Reno, Ford.
 34845. Chas. A. Ragar, Sheephead, Ford.
 34846. Frank Pardini, Red Rock, Ford.
 34847. A. Azvedo, Reno, Ford.
 34848. Jack Segale, Reno, Ford.
 34849. H. Hansen, Verdi, Ford.
 34850. B. A. Reed, Reno, Ford.
 34851. W. E. Yancy, Reno, Dort.
 34852. B. Lohiday & Co., Reno, Hudson.
 34853. J. H. Sandmann, Yerington, Oakland.
 34854. J. N. Copus, Hawthorne, Chevrolet.
 34855. B. L. Quayle, Ely, Franklin.
 34856. R. M. Kidder, Mason, Ford.
 34857. C. B. Wheelless, Ely, Chevrolet.
 34858. Eli Cann, Fallon, Ford.
 34859. J. W. Gill, Fallon, Ford.
 34860. John Shirley, Silver Peak, Overland.
 34861. J. W. Gerow, M.D., Reno, Chevrolet.
 34862. C. A. Pettis, Goldfield, Maxwell.
 34863. George H. Howard, Goldfield, Ford.

- 34864...Agnes K. O'Brien, Pioneer, E.M.F.
 34865...Mrs. L. Stevens, Tonopah, Hup.
 34866...Mrs. G. L. Hogg, Tonopah, Ford.
 34867...Mrs. W. H. Meldrum, Tonopah, Buick.
 34868...Miss E. Mathorpe, Reno, Oldsmobile.
 34869...Mrs. R. F. Gilbert, Tonopah, Ford.
 34870...Galen Tannehill, Wonder, Dodge.
 34871...Chas. A. McLeod, Yerington, Simplex.
 34872...D. D. Williams, Tuscarora, Ford.
 34873...Mrs. L. Benson, Ruby Valley, Dodge.
 34874...E. L. Drappo, Reno, Cadillac.
 34875...Benj. Rotholz, Reno, Hudson.
 34876...D. F. Burke, Carson City, Ford.
 34877...Ona W. Cordill, Reno, Buick.
 34878...C. M. White, Reno, Ford.
 34879...Mrs. Christine Nelson, Reno, Ford.
 34880...Geo. S. Brown, Reno, Packard.
 34881...John E. Matley, Reno, Mitchell.
 34882...Chas. French, Las Vegas, Ford.
 34883...Neil Carmichael, Unionville, Dodge.
 34884...D. R. Hancock, Unionville, Ford.
 34885...A. M. Smith, Reno, Ford.
 34886...L. Devincenzi, Reno, Ford.
 34887...L. Devincenzi, Reno, Ford.
 34888...Harry Records, Reno, Studebaker.
 34889...Geo. C. Richardson, Las Vegas, Ford.
 34890...E. Bellschweiler, Wells, Ford.
 34891...H. A. Leach, Wells, Ford.
 34892...W. A. Vance, Ely, Dodge.
 34893...M. T. Collins, Ely, G.M.C.
 34894...Frank Callaway, Ely, Ford.
 34895...Mrs. H. A. Code, Ely, Ford.
 34896...H. Bredell, Ely, Ford.
 34897...M. T. Collins, Ely, Ford.
 34898...Harry Maredretas, Lovelock, Buick.
 34899...J. O. Burrus, Toulon, Overland.
 34900...J. C. McKay, Tonopah, Hudson.
 34901...L. C. Majors, Reno, Herreshoff.
 34902...J. L. Darrough, Round Mtn., Cadillac.
 34903...C. C. Walker, Beatty, Buick.
 34904...Geo. Rowe, Beatty, Ford.
 34905...J. E. Shields, Goldfield, Ford.
 34906...R. I. Johnson, Goldfield, Ford.
 34907...Harry H. Blush, Bonnie Clare, Ford.
 34908...Horace J. Brown, Goldfield, Dodge.
 34909...J. E. Horton, Pioneer, Ford.
 34910...Fred Tholke, Gardnerville, Ford.
 34911...Douglas County, Minden, Ford.
 34912...Victor Bull, Gardnerville, Ford.
 34913...Curtis Walker, Gardnerville, Chevrolet.
 34914...E. L. Wyatt, Genoa, Buick.
 34915...Ralph Leland, Minden, Buick.
 34916...Fritz Nedenriep, Minden, Buick.
 34917...Ed. Mulcare, Tonopah, Imperial.
 34918...J. D. Wright, Tonopah, Ford.
 34919...Geo. H. Morton, Ash Meadows, Wilcox.
 34920...Nev. Mach. & Elec. Co., Reno, Ford.
 34921...Nev. Tel. S. & C. Co., Carson, Maxwell.
 34922...Adolph Dressler, Reno, Ford.
 34923...Harry Johnson, Lakeview, Lexington.
 34924...Justin Ouranza, Yerington, Overland.
 34925...E. R. Richardson, Belmont, Ford.
 34926...Harry D. Goldbach, Manhattan, Chev.
 34927...Joe Beane, Mina, Ford.
 34928...W. L. E. Brown, Mason, Maxwell.
 34929...Byron Gates, Dayton, Ford.
 34930...J. J. Jordan, Goldfield, Oakland.
 34931...Mrs. B. A. Evans, Reno, Overland.
 34932...A. M. Beebe, Reno, Jeffery.
 34933...Linford Reilly, Yerington, Ford.
 34934...Mary G. McNamara, Silver City, Ford.
 34935...Oliver Swanson, Gardnerville, Ford.
 34936...A. R. Werner, Gardnerville, Buick.
 34937...White Pine Soda Co., Ely, Ford.
 34938...E. Morrison, Ely, Ford.
 34939...Leo A. Corish, McGill, Ford.
 34940...S. E. Parshall, McGill, Ford.
 34941...Arthur A. Slater, McGill, Ford.
 34942...L. H. O'Neill, Ely, Mercer.
 34943...A. B. Witcher, Ely, Reno.
 34944...M. Williamson, McGill, Jeffery.
 34945...Rae Stevenson, McGill, Overland.
 34946...E. A. Bates, Ely, Maxwell.
 34947...P. P. Bennett, Ely, Maxwell.
 34948...The Louis Cononelos, McGill, Kissel.
 34949...J. C. O'Brien, McGill, Cadillac.
 34950...J. C. Broulett, Fallon, Buick.
 34951...M. F. Martin, Austin, Oldsmobile 6.
 34952...Geo. Jeffery, Fernley, Ford.
 34953...Jos. Thuren, Lovelock, Oakland.
 34954...John Madalena, Reno, Ford.
 34955...N. W. Barker, Reno, Pierce Arrow.
 34956...A. J. Snyder, Cherry Creek, Ford.
 34957...Wilton J. Davis, Reno, Hudson.
 34958...Bebecca Stratton, Cherry Creek, Ford.
 34959...J. H. Brightwell, Ruth, Chevrolet.
 34960...Ed. Halstead, Duckwater, Chevrolet.
 34961...Geo. L. Bennett, Schellbourne, Chev.
 34962...Louis Pierotti, Reno, Studebaker.
 34963...Dr. G. M. Gardner, Reno, Cadillac.
 34964...H. P. Robinson, Montello, Crow.
 34965...J. H. Glenn, Lurline, Saxon.
 34966...W. H. Sawyer, Caliente, Ford.
 34967...G. D. Hason, Winnemucca, Maxwell.
 34968...C. B. Brown Co., Winnemucca, Ford.
 34969...C. B. Brown Co., Winnemucca, Ford.
 34970...C. D. Brown, Winnemucca, Ford.
 34971...C. F. Ast, Winnemucca, Ford.
 34972...W. W. Wells, Junco, Ford.
 34973...J. G. Moore, Winnemucca, Dodge.
 34974...J. Sheehan, Winnemucca, Willys-K.
 34975...O. A. Pennock, Elko, Dodge.
 34976...C. R. Lewis, Smith, Buick 6.
 34977...Walter Alvin White, Reno, Pope-Hart.
 34978...C. H. Rand, Fallsade, Cadillac.
 34979...Lazaro Zubiri, Cherry Creek, Ford.
 34980...George Rogers, East Ely, Ford.
 34981...H. C. Nicholson, Ely, Paige.
 34982...Ed. Andrews, East Ely, Buick.
 34983...Miguel Zubiri, Schellbourne, Case.
 34984...Lazaro Zubiri, Cherry Creek, Jordan.
 34985...W. M. Farris, Manhattan, Maxwell.
 34986...W. M. Ingram, Tonopah, Ford.
 34987...Jack Aylward, Goldfield, Cole.
 34988...E. W. Scott, Smith, Ford.
 34989...J. S. Mann, Hudson, Buick 4.
 34990...F. B. Mann, Hudson, Reno 6.
 34991...E. O. Dunnigan, Goldfield, Ford.
 34992...Ed. Tanner, Yerington, White.
 34993...W. Y. Gale, Reno, Buick.
 34994...Robert Sloan, Yerington, Ford.
 34995...B. H. Keymers, Yerington, Buick.
 34996...A. J. Scheel, Gerlach, Ford.
 34997...M. Miller, Reno, Studebaker.
 34998...P. J. Van Zweedan, Reno, Maxwell.
 34999...Chas. Bayeroff, Virginia City, Cadillac.
 35000...P. J. Leverich, Thompson, Ford.
 35001...J. F. Boggs, McGill, Ford.
 35002...Ralph T. Smith, Verdi, Dodge.
 35003...Mrs. W. Van Voorhis, Fallon, Dodge.
 35004...Joe Rankin, Jean, Buick.
 35005...W. T. McCollum, Reno, Flanders.
 35006...Mrs. F. J. Ruison, Reno, Dodge.
 35007...Thomas I. Powell, Unionville, Reo.
 35008...M. A. Howard, McGill, Oakland.
 35009...M. S. Dickerson, Cleveland Ranch, Ford.
 35010...E. W. Harrington, Reno, Buick.
 35011...J. Pincolini, Reno, Buick.
 35012...William L. Paul, Elko, Mack.
 35013...William L. Paul, Elko, Mack.
 35014...William L. Paul, Elko, Ford.
 35015...W. B. Sutton, Battle Mountain, Ford.
 35016...Rex C. Ewing, Goodsprings, Ford.
 35017...John M. Carter, Goodsprings, Ford.
 35018...H. J. Woodard, Las Vegas, Ford.
 35019...Int. Prop. Sys., Las Vegas, Jeffery Q.
 35020...Wm. F. Huren, McGill, Paige.
 35021...Mabel H. Weber, Beowawe, Overland.
 35022...W. J. Mahoney, Beowawe, Dodge.
 35023...W. H. Bishop, Ely, Chalmers.
 35024...Michael Joseph Burns, McGill, Dodge.
 35025...J. C. Moore, Fallon, Buick.
 35026...J. M. White, Metropolis, Ford.
 35027...J. Carlos Lambert, Metropolis, Ford.
 35028...Mildred Reinken, Elko, Dodge.
 35029...Robert Richardson, Wells, Ford.
 35030...Consolidated C. M. Co., Kimberly, Ford.
 35031...Mrs. Sivert Nelson, Reno, Ford.
 35032...Candelaria Mines Co., Mina, Ford.
 35033...O. K. Lamb, Reno, Ford.
 35034...Mrs. Sam Platt, Reno, Dodge.
 35035...Mrs. Louise Lucas, National, Grant 6.
 35036...Mrs. R. M. Drew, Reno, Overland.
 35037...C. M. Henningsen, Gardnerville, Buick.
 35038...Henningsen Bros., Gardnerville, Natl.
 35039...C. A. Yori, Reno, Oldsmobile.

- 35040....Chas. E. McLeod, Millett, Buick.
 35041....O. A. Radia, Mason, Chevrolet.
 35042....W. J. Douglass, Tonopah, Chevrolet.
 35043....J. T. Milligan, Goldfield, Buick.
 35044....Fred Andersen, Goldfield, Ford.
 35045....B. L. Peters, Searchlight, Studebaker.
 35046....D. D. Long, Searchlight, Reo.
 35047....Gus Erickson, Searchlight, Chalmers.
 35048....Chas. M. White, Searchlight, Chevrolet.
 35049....B. F. Cordry, Yerington, Chevrolet.
 35050....Frank E. Hanson, Yerington, Ford.
 35051....Yerington Elec. Co., Yerington, Ford.
 35052....Mrs. A. L. Eaton, Reno, Ford.
 35053....J. O. Kemple, Goodsprings, Overland.
 35054....F. D. Black, Reno, Ford.
 35055....Dave Carlson, Wonder, Reo.
 35056....Harry Hansen, Fallon, Ford.
 35057....F. M. Tannehill, Wonder, Dodge.
 35058....C. W. Westover, Reno, Buick.
 35059....Reno P. & H. Co., Reno, E.M.F.
 35060....O. A. Dockham, Reno, Reo.
 35061....Fred Brault, Reno, Dodge.
 35062....G. K. Wood, Winnemucca, Ford.
 35063....J. G. Stewart, Willow Point, Ford.
 35064....Mrs. Alma Boyd, Winnemucca, Ford.
 35065....P. V. Sanders, Winnemucca, Buick 6.
 35066....W. G. Adamson, Winnemucca, Cadillac.
 35067....A. W. Lovell, Winnemucca, Dodge.
 35068....C. W. Smith, Lurline, Studebaker.
 35069....J. B. Biale, Eureka, Oldsmobile.
 35070....P. J. Orgilvie, Lee, Dodge.
 35071....John J. Keig, McGill, Dodge.
 35072....Clark County, Las Vegas, White.
 35073....Clark County, Las Vegas, Dodge.
 35074....Wm. Licking, Battle Mtn., Maxwell.
 35075....Mrs. H. R. James, Ely, Ford.
 35076....Steptoe Valley Hospital, East Ely, Kia.
 35077....Steptoe Valley Hospital, East Ely, Pack.
 35078....Lovelock Merc. Co., Lovelock, Internatl.
 35079....H. W. Robinson, Lovelock, Saxon.
 35080....Mrs. H. O. Abbott, Lovelock, Ford.
 35081....P. H. Craven, Jumbo, Dodge.
 35082....Wm. T. Ellis, Goodsprings, Ford.
 35083....James Cox, Goodsprings, Ford.
 35084....Mrs. E. Ryan, Carson City, Chevrolet.
 35085....W. R. Tucker, Carson City, Buick.
 35086....Wm. Lorditch, Mound House, Overland.
 35087....M. B. Moore, Reno, Haynes.
 35088....F. W. Bower, Silver City, Ford.
 35089....Sam Moxingo, Reno, Cadillac.
 35090....Rose Sellars, Winnemucca, Dodge.
 35091....M. J. Rioridan, Midas, Ford.
 35092....Arentz & Perkins, Goodsprings, Ford.
 35093....Jose Lustadia, Lamolle, Studebaker.
 35094....James P. Bellinger, Lamolle, Maxwell.
 35095....Jos. E. Connors, Reno, Studebaker.
 35096....Henry Broomer, Hazen, Maxwell.
 35097....Walden & Burnett, McGill, Chevrolet.
 35098....H. Washington, Las Vegas, Stoddard D.
 35099....H. M. Short, Ruby Valley, Oldsmobile.
 35100....J. F. McCruiden, Sparks, Buick.
 35101....H. O. Shantz, Sparks, Maxwell.
 35102....Chas. L. Parker, St. Thomas, Ford.
 35103....Lee Hoxan, Elko, Ford.
 35104....C. P. Haskins, Winnemucca, Ford.
 35105....Anna W. Bradley, Winnemucca, Ford.
 35106....Anna W. Bradley, Winnemucca, Ford.
 35107....Mrs. James Low, McDermitt, Ford.
 35108....Wm. Blattnar, Winnemucca, Reo.
 35109....C. P. Hoskins, Winnemucca, Ford.
 35110....C. P. Hoskins, Winnemucca, Cadillac.
 35111....Nicklas M. Co., Battle Mtn., Ford.
 35112....Nicklas M. Co., Battle Mtn., Ford.
 35113....E. J. Hart, Tonopah, Ford.
 35114....C. M. Kennedy, Ione, Ford.
 35115....Gansberg & Dreyer, Minden, Ford.
 35116....Gansberg & Dreyer, Minden, Chandler.
 35117....August Kettenburg, Sheridan, Overland.
 35118....Peter Krummes, Minden, Ford.
 35119....A. E. Purvine, Smith, Ford.
 35120....Shelton McClain, Tonopah, Dodge.
 35121....Fred Fletcher, Dyer, Studebaker.
 35122....Arthur Pursel, Yerington, Buick.
 35123....A. J. Moler, Virginia City, Laurel.
 35124....J. A. Marshall, Luning, Chevrolet.
 35125....Chas. O. Taggs, Goldfield, Overland.
 35126....Elizabeth Dooley, Goldfield, Ford.
 35127....Elizabeth Dooley, Goldfield, Ford.
 35128....Geo. H. Copley, Imlay, Ford.
 35129....Geo. H. Copley, Imlay, Ford.
 35130....Geo. H. Copley, Imlay, Ford.
 35131....W. H. Wilson, Goodsprings, Ford.
 35132....Francis Herman, Reno, Ford.
 35133....Tony Bettancourt, Reno, Chevrolet.
 35134....J. V. Bonner, Mason, Overland.
 35135....E. C. Hecker, Mason, Overland.
 35136....Calvin Bradway, Sulphur, Ford.
 35137....Harry Wood, Reno, Studebaker.
 35138....W. F. West, Ibadah, Utah, Buick.
 35139....Fred Henriod, Parker, Ford.
 35140....Bertram Hill, Yerington, Ford.
 35141....Black Metals, Inc., Jack Rabbit, Reno.
 35142....Joe F. Perkins, Overton, Dodge.
 35143....Homer Anrig, Wells, Ford.
 35144....Sam Lee, Carson City, Ford.
 35145....John Ralph, Wells, Ford.
 35146....J. Fay McCuiston, Montello, Buick.
 35147....A. G. Whisenhaunt, Fallon, Ford.
 35148....Starr W. Hill, Lovelock, Oakland.
 35149....W. M. Biggs, Lovelock, Reo.
 35150....C. E. Stephens, Sharp, Hupmobile.
 35151....Sharp Land & Cattle Co., Sharp, Ford.
 35152....Eph Oxborrow, Sunnyside, Ford.
 35153....Fred K. Davis, Elko, Saxon 6.
 35154....Ed. Rotholz, Reno, Hudson.
 35155....S. C. Fogus, Reno, Studebaker.
 35156....Carrie F. Brown, Reno, Chevrolet.
 35157....Wm. Davis, Caliente, Ford.
 35158....James B. Andrain, Reno, Buick.
 35159....C. D. Bell, Silver Peak, Ford.
 35160....Sam Murray, Reno, Ford.
 35161....A. McMillan, Wabaska, Ford.
 35162....H. M. Gilkison, Ludwig, Ford.
 35163....Mike Landreth, Montello, Ford.
 35164....P. R. Whytock, Sutro, Ford.
 35165....A. M. Nesmith, Smith, Dodge.
 35166....W. M. Beyer, Goldfield, Ford.
 35167....J. M. Lancaster, Yerington, Ford.
 35168....Fred S. Shoup, Pahrump, Ford.
 35169....Tehatticup Mine, Nelson, Ford.
 35170....F. M. Fulestone, Wellington, Buick.
 35171....Ernest L. Hall, Reno, Oakland.
 35172....Ernest L. Hall, Reno, Ford.
 35173....C. F. Keil, Winnemucca, Ford.
 35174....John Costa, Winnemucca, Ford.
 35175....C. G. Violet, Willow Point, Ford.
 35176....Abel & Curtner, Willow Point, Ford.
 35177....W. H. Abel, Willow Point, Allen.
 35178....W. L. Akin, Winnemucca, Dodge.
 35179....S. W. Taylor, Lovelock, Metz.
 35180....John C. Clark, Reno, Oldsmobile.
 35181....Chas. Furman, Mill City, Buick.
 35182....W. J. Dolan, Golconda, Maxwell.
 35183....Frank Case, Elko, Oldsmobile.
 35184....Harvey J. Wilson, Elko, Maxwell.
 35185....F. L. Littell, Yerington, Reo.
 35186....H. D. Trenam, Yerington, Ford.
 35187....H. P. Campbell, Yerington, Cadillac.
 35188....H. A. Ridge, Las Vegas, Hudson.
 35189....John Cresto, Reno, Chalmers.
 35190....Vic Becasas, Reno, Ford.
 35191....Union Land & Cattle Co., Reno, Ford.
 35192....Mrs. Wm. Byrne, Fallon, Ford.
 35193....Nina V. Butler, Sparks, Overland.
 35194....Percy Ryals, Oreana, Ford.
 35195....W. H. Pierson, Wadsworth, Ford.
 35196....Mrs. G. S. Harrison, Sparks, Overland.
 35197....Nettie Tapogna, Reno, Studebaker.
 35198....James E. Harley, Las Vegas, Chalmers.
 35199....W. H. Ball, Goodsprings, Dodge.
 35200....C. C. Ohl, Reno, Dodge.
 35201....George Yamasaki, Sparks, Ford.
 35202....L. N. Carpenter, Lovelock, Case.
 35203....W. E. Warren, Wabaska, Buick.
 35204....J. A. McDaid, Manhattan, Ford.
 35205....J. A. McDaid, Manhattan, Studebaker.
 35206....J. A. McDaid, Manhattan, Studebaker.
 35207....T. S. Baker, Manhattan, Studebaker.
 35208....Como Con. Mines Co., Como, Ford.
 35209....Daniel Murnane, Goldfield, Dodge.
 35210....Louis Mazade, Goldfield, Ford.
 35211....G. W. Rogers, Simpson, Dodge.
 35212....Milo M. Harcourt, Millers, Grant 6.
 35213....J. W. Haines, Rawhide, Buick.
 35214....Fred Carson, Sunnyside, Ford.
 35215....John Scott, Sunnyside, Ford.

- 35216....A. D. Radcliff, Reno, Dodge.
 35217....Martin Sutor, Virginia City, Studebkr.
 35218....C. M. Christensen, Reno, Maxwell.
 35219....George W. Lohrop, Reno, Buick.
 35220....George L. Eckman, Battle Mtn., Stbkr.
 35221....W. F. Kottke, Battle Mountain, Velle.
 35222....Felix Plaza, Tuscarora, Studebaker.
 35223....George Holland, Lamaille, Dodge.
 35224....John Holland, Lamaille, Dodge.
 35225....C. E. Lamb, Valmy, Ford.
 35226....Nev. U. M. Lag. Co., East Ely, Thomas.
 35227....W. S. Carter, Millett, Dodge.
 35228....P. B. Gobin, Austin, Ford.
 35229....Standard Oil Company, Reno, Autocar.
 35230....Edmund Dietz, Northam, Buick.
 35231....L. F. Canterbury, Fallon, Chevrolet.
 35232....Paul E. Mudgett, Fallon, Willys.
 35233....Frank Besso, Reno, Ford.
 35234....Dale V. Clanton, Reno, Ford.
 35235....E. Segale, Reno, Chalmers.
 35236....Howard Lee, Elko, Overland.
 35237....J. I. Earl, Bunkerville, Ford.
 35238....John R. Howard, Cherry Creek, Ford.
 35239....M. Gardella, Sparks. See No. 31898,
 which was lost in mail.
 35240....Horace Greeley (Indian), Schurz, Over.
 35241....R. T. Payne, Mason, Ford.
 35242....H. R. Lange, Jr., Gardnerville, Buick.
 35243....Pittsburg S. P. Co., Tonopah, Stearns.
 35244....Pittsburg S. P. Co., Tonopah, Vulcan.
 35245....Pittsburg S. P. Co., Tonopah, Packard.
 35246....Hoffman & Vetter, Pahrump, Ford.
 35247....A. Dondaro, Reno, Buick.
 35248....E. H. Markwell, Yerington, Ford.
 35249....G. W. Bettles, Mina, Republic.
 35250....Louis Saroni, Wellington, Ford.
 35251....John Zueck, Goldfield, Ford.
 35252....Mrs. A. M. Coleman, Goldfield, Saxon.
 35253....Judge C. E. Mack, Reno, Hudson 6.
 35254....Ernest Billery, Tonopah, Pope-Hart.
 35255....G. W. Gilman, Tonopah, Oldsmobile.
 35256....Wm. Burkhardt, Goodsprings, Ford.
 35257....C. I. Burt, Bruner, Buick.
 35258....W. C. Short, Reno, Studebaker.
 35259....Enrico Del Sarto, Reno, Ford.
 35260....James Nelson, Reno, Oakland.
 35261....Jessie Streeter, Lamaille, Grant 6.
 35262....Dr. W. L. Samuels, Reno, Oldsmobile.
 35263....W. H. Miller, Battle Mountain, Ford.
 35264....E. H. Emery, Searchlight, E.M.F.
 35265....John A. Rafetto, Reno, Oakland.
 35266....A. J. Seiber, Jean, Buick.
 35267....T. Linehan, Goldfield, Ford.
 35268....C. P. Jensen, Goldfield, Maxwell.
 35269....H. H. Gallagher, Carrara, Apperson.
 35270....Mrs. I. M. Southworth, Tonopah, Hup.
 35271....H. Hanson, Yerington, Studebaker.
 35272....T. F. Banigan, Tonopah, Ford.
 35273....Nat Hurd, Simpson, Ford.
 35274....R. L. Hoblit, Artesia, Buick.
 35275....G. Anderson (Indian), Belmont, Cutting.
 35276....Mary Shane, Fallon, Oldsmobile.
 35277....E. J. Norcutt, Fallon, Ford.
 35278....Arthur Shaw, Wonder, Overland.
 35279....John Irish, Las Vegas, Studebaker.
 35280....Jack Lacy, Goodsprings, Ford.
 35281....A. C. Smith, Reno, Overland.
 35282....G. A. McCormick, Reno, Hupmobile.
 35283....Chris. Jacobsen, Reno, Maxwell.
 35284....Mrs. Grace Jensen, McGill, Dort.
 35285....B. W. Coleman, Carson City, Overland.
 35286....H. S. Pohe, Yerington, Overland.
 35287....S. Bartusch, Las Vegas, Overland.
 35288....Morton Morrison, Fallon, Dort.
 35289....Peter Buol, Las Vegas, Studebaker.
 35290....Peter Buol, Las Vegas, Maxwell.
 35291....S. N. Parsons, Kimberly, Studebaker.
 35292....W. H. Lambert, Ely, Chalmers.
 35293....Ferretto Bros., Steamboat, Ford.
 35294....Geo. Halstead, Currant, Ford.
 35295....Chas. Halstead, Currant, Chevrolet.
 35296....Chas. Vienne, Fernley, Ford.
 35297....J. M. Blood, Reno, Ford.
 35298....L. Radcliffe, Reno, Overland.
 35299....H. C. Douglas, Reno, Reo.
 35300....Addie J. Stoker, Lovelock, Chevrolet.
 35301....C. S. Muson, Currant, Ford.
 35302....E. L. Boven, Mason, Ford.
 35303....A. W. Archer, Wichman, Reo.
 35304....Earl Jensen, Yerington, Ford.
 35305....M. V. Newell, Wellington, Buick.
 35306....W. H. Sanders, Mina, Briscoe.
 35307....Gottfried Isakson, Tonopah, Ford.
 35308....Geo. McIntire, Tonopah, Buick.
 35309....R. L. Thompson, Reno, Chandler.
 35310....G. M. Gray, Reno, Studebaker.
 35311....John Quick, Nelson, Dodge.
 35312....J. W. Gaughan, Yerington, Ford.
 35313....Jos. Flynn, Jr., Palisade, Ford.
 35314....Carl D. Cleland, Mason, Buick.
 35315....Mrs. T. Ferguson, Tonkin, Chevrolet.
 35316....Wm. Pedroll, Dayton, Buick.
 35317....Alf. A. Johnson, McGill, Chevrolet.
 35318....John Lusett, Steptoe, Ford.
 35319....George W. Robinson, Osceola, Ford.
 35320....J. B. Talbott, Reno, Dort.
 35321....Utah Construction Co., Montello, Dodge.
 35322....H. F. Hagen, Reno, Ford.
 35323....Mrs. Elizabeth Brown, Reno, Ford.
 35324....Jos. C. Phillips, Austin, Dodge.
 35325....Harry Morrill, Reno, Maxwell.
 35326....F. A. Murphy, Eagleview, Oldsmobile.
 35327....Frank D. Burke, Reno, Cadillac.
 35328....Jacob Bros., Reno, Chevrolet.
 35329....J. S. Slover, Death Valley, Ford.
 35330....W. W. Mapes, Johnnie, Ford.
 35331....Clayton Archibald, Currie, Ford.
 35332....Utah Construction Co., Montello, Ford.
 35333....J. S. Parmley, Montello, Oakland.
 35334....Utah Construction Co., Montello, Ford.
 35335....Utah Construction Co., Montello, Fed.
 35336....C. W. Clubine, Lamaille, Studebaker.
 35337....Chas. A. Hendel, Simpson, Ford.
 35338....E. Prout, Winnemucca, Ford.
 35339....T. N. Danforth, Winnemucca, Ford.
 35340....Santi Arriola, Paradise, Ford.
 35341....F. J. Oliverins, Winnemucca, Ford.
 35342....A. J. McCauley, Imlay, Ford.
 35343....G. E. Stall, Golconda, Buick.
 35344....Chas. Gondra, Paradise, Chevrolet.
 35345....Fred A. Arnold, Goldfield, National.
 35346....Mrs. E. H. Sweetland, Carson City, Fd.
 35347....Abe Ambrose, Empire, Ford.
 35348....C. C. Truett, Elko, Oldsmobile.
 35349....O. F. Burton, Ruth, Ford.
 35350....Mrs. H. Boese, East Ely, Franklin.
 35351....J. D. Minor, Winnemucca, Buick.
 35352....Andy Thompson, Winnemucca, Ford.
 35353....Andy Thompson, Winnemucca, Ford.
 35354....J. O. Davis, Winnemucca, Chevrolet.
 35355....Robert Hanson, Paradise, Ford.
 35356....R. S. Silver, Jarbridge, Ford.
 35357....E. A. Murphy, Reno, Reo.
 35358....Enico Grassini, Sparks, Maxwell.
 35359....W. A. Austin, Wadsworth, Chevrolet.
 35360....E. G. Anderson, Reno, Chalmers.
 35361....Jas. F. Gallagher, Fallon, Chevrolet.
 35362....Edward L. Green, Lovelock, Ford.
 35363....Owen T. Bosquit, Fallon, Studebaker.
 35364....Theo. Parks, Jarbridge, Buick.
 35365....W. A. Wood, Carson City, Ford.
 35366....W. H. Van Eaton, Jarbridge, Ford.
 35367....M. E. Books, Jarbridge, Ford.
 35368....W. H. Bond, Beatty, Oldsmobile.
 35369....C. W. Taylor, Goldfield, Buick.
 35370....F. E. Jones, Goldfield, Overland.
 35371....P. A. Hayden, Thompson, Ford.
 35372....L. L. Mushett, Tonopah, Chevrolet.
 35373....E. J. Burgess, Tonopah, Ford.
 35374....Henry Schubert, Round Mtn., Ford.
 35375....Sam Giotthi, Tonopah, Reo.
 35376....Alex. McLeod, Tonopah, Ford.
 35377....Herman Dietloff, Schellbourne, Ford.
 35378....Ely Meat Co., Ely, Ford.
 35379....E. Battersby, Dayton, Ford.
 35380....Thos. Gracey, Mound House, Maxwell.
 35381....Myrtle L. Robear, Tonopah, Overland.
 35382....Merl Metz, Reno, Hupmobile.
 35383....G. C. McVicar, Smith, Hupmobile.
 35384....E. A. Byler, Goldfield, Overland.
 35385....Florence L. Moats, Goldfield, Ford.
 35386....L. F. Clar, Manhattan, Ford.
 35387....W. H. Thomas, Tonopah, Ford.
 35388....J. W. Stewart & Co., Tonopah, Hudson.
 35389....Geo. T. Miller, Manhattan, Dodge.
 35390....Chas. E. Bugg, Reno, Buick.

- 35391...A. O. Taylor, Gardnerville, Ford.
 35392...C. W. Coveney, Rawhide, Reo.
 35393...Emil Weichert, Reno, Ford.
 35394...Geo. Sanderson, Las Vegas, Hupmobile.
 35395...William Hunter, Elko, Oldsmobile.
 35396...J. M. Slopanski, Ruth, Reo.
 35397...John B. Romano, Elko, Overland.
 35398...W. T. Maestretti, Austin, Hupmobile.
 35399...Geo. W. Schmiedlein, Austin, Dodge.
 35400...Mrs. R. M. Chaplin, Reno, Chevrolet.
 35401...Dr. J. L. Robinson, Reno, Reo.
 35402...Union Land & Cattle Co., Reno, Ford.
 35403...L. H. Jewett, Reno, Ford.
 35404...Frank M. Pontes, Reno, Ford.
 35405...Angelo Troisi, Reno, Ford.
 35406...Frank Cantlon, Sparks, Hudson.
 35407...Atlas Wonder M. Co., Wonder, Ford.
 35408...L. C. Dorworth, Fallon, Ford.
 35409...Michael Wagy, Reno, Dorris.
 35410...Edith G. Vingut, Reno, Buick.
 35411...R. Kirman, Reno, Hudson.
 35412...Baker Hamilton & P. Co., Reno, Dodge.
 35413...Mrs. A. Annett, Mina, Ford.
 35414...J. N. Reimers, Round Mtn., Ford.
 35415...Gent Martelletti, Currant, Ford.
 35416...A. B. Perkins, Carrara, Ford.
 35417...George Holcomb, Reno, Hudson.
 35418...Wm. Rice, Reno, Ford.
 35419...L. F. Emrick, Searchlight, Buick.
 35420...John Bindshadler, Tonopah, Ford.
 35421...Minnesota Nev. M. Co., Yerington, Chal.
 35422...Minnesota Nev. M. Co., Yerington, Fd.
 35423...Minnesota Nev. M. Co., Yerington, Fd.
 35424...A. L. Daniels, Yerington, Garford.
 35425...A. S. Phipps, Yerington, Overland.
 35426...A. S. Phipps, Yerington, Reo.
 35427...V. C. Bernard, Yerington, Ford.
 35428...Fred. M. Johnson, Dayton, Overland.
 35429...H. H. Davis, Reno, Ford.
 35430...Frank Bros. Co., Reno, Ford.
 35431...Frank Bros. Co., Reno, Ford.
 35432...L. S. Cooper, Lovelock, Ford.
 35433...M. H. Lund, Reno, Ford.
 35434...J. B. Ratliff, Winnemucca, Reo.
 35435...W. D. Ellis, Yerington, Reo.
 35436...W. D. Ellis, Yerington, Reo.
 35437...Guy M. Blair, Elko, Ford.
 35438...Owen Vaughan, Ruby Valley, Ford.
 35439...E. E. McCauley, Indian Springs, Ford.
 35440...Joe Santini, Goodsprings, Ford.
 35441...H. C. Power, Fallon, Saxon 6.
 35442...Oliver E. Smith, Reno, Buick.
 35443...Mrs. F. H. Pratt, Reno, Liberty.
 35444...Mrs. Lena Ducker, Reno, Peerless.
 35445...J. C. Carter, Fallon, Ford.
 35446...W. J. May, Sparks, Maxwell.
 35447...Gray Mining Co., Contact, Ford.
 35448...J. M. Lytle, Overton, Ford.
 35449...A. F. Jackson, Winnemucca, White.
 35450...A. F. Jackson, Winnemucca, Velle.
 35451...Geo. Southward, Winnemucca, Marmou.
 35452...H. K. Davis, Winnemucca, Dodge.
 35453...M. Danglemaier, Amos, Studebaker.
 35454...O. S. Hoffman, Paradise, Ford.
 35455...Moshula Bell, Reno, Ford.
 35456...Wm. Dressler, Minden, Buick.
 35457...Wm. Dressler, Minden, Ford.
 35458...A. A. Lowe, Fallon, Hupmobile.
 35459...Sam Spring, Northam, Ford.
 35460...M. Z. Kolstrup, Stillwater, Ford.
 35461...Webb V. Buckskin, Palisade, Ford.
 35462...Webb V. Buckskin, Palisade, Dodge.
 35463...Angle Del Curto, Reno, Overland.
 35464...H. G. Hunken, Verdi, Ford.
 35465...N. Hermanson, Preston, Ford.
 35466...Johnny Blossom, Battle Mtn., Overland.
 35467...L. Andrus, Battle Mountain, Ford.
 35468...R. T. Swallow, Shoshone, Reo 4.
 35469...R. T. Swallow, Shoshone, Federal.
 35470...R. T. Swallow, Shoshone, Chandler 6.
 35471...R. Semenza, Reno, Chalmers.
 35472...V. B. Terrell, Fallon, Dodge.
 35473...Palmetto Con. Inc., Palmetto, Ford.
 35474...C. M. Allum, Mason, Oakland.
 35475...Manuel Silva, Yerington, Buick.
 35476...F. C. Beedle, Belleville, Ford.
 35477...Geo. F. Thompson, Mina, Reo 5.
 35478...Chas. Hinds, Simpson, Buick 4.
 35479...Chas. Brown, Tonopah, Ford.
 35480...Nevada Natl. Ice Co. S., Tonopah, Ford.
 35481...F. L. Kelsay, Keystone, Republic.
 35482...E. O. Baker, Goldfield, Ford.
 35483...A. S. Gaines, Searchlight, Maxwell.
 35484...H. E. Benson, Reno, Buick.
 35485...C. L. Fish, Round Mountain, Ford.
 35486...J. H. Cairns, Yerington, Ford.
 35487...D. A. Smith, M.D., Mina, Chevrolet.
 35488...P. Kestell, Virginia City, Reo.
 35489...Frank Makata, Mina, Chevrolet.
 35490...Mrs. A. L. Candee, Fallon, Ford.
 35491...F. M. Wightman, Fallon, Dodge.
 35492...D. Alexander, Fallon, Ford.
 35493...Mildred Brayton, Ely, Ford.
 35494...Mrs. Birdie Thomas, Reno, Ford.
 35495...Scott Spencer, Battle Mountain, Ford.
 35496...W. H. Seagrave Co., Contact, Ford.
 35497...Fred L. Mott, Ely, Ford.
 35498...L. A. Gibbons, Reno, Reo.
 35499...Carl Wasserbach, Las Vegas, Ford.
 35500...F. C. Buckingham, Paradise, King 8.
 35501...F. P. Scotter, Reno, Ford.
 35502...H. B. Nanter, Lovelock, Ford.
 35503...Mrs. E. L. Zimmer, Franktown, Ford.
 35504...John T. Thiez, Carson City, Ford.
 35505...T. J. Douglass, Virginia City, Reo.
 35506...D. J. Fodrin, Sparks, Oldsmobile.
 35507...Churchill Co. Farm Bureau, Fallon, Fd.
 35508...A. C. Gerdemann, Fallon, Ford.
 35509...Patsy Graham, Stillwater, Ford.
 35510...R. Roineiro, Reno, Buick.
 35511...B. I. Barlow, Goldfield, Ford.
 35512...B. I. Barlow, Goldfield, Ford.
 35513...Fred Walther, Jiggs, Dodge.
 35514...H. A. Banta, Reno, Ford.
 35515...H. B. Jameson, Reno, Ford.
 35516...Carl J. Lockwood, Reno, Ford.
 35517...F. G. Burroughs, Reno, Franklin.
 35518...C. M. Rosborough, Banta, Overland.
 35519...C. W. Jensen, Preston, Paige.
 35520...T. H. Lever, Mason, Hupmobile.
 35521...Ed. Beecraft, Tonopah, Ford.
 35522...Paul T. Bailey, Yerington, Ford.
 35523...F. M. Rapp, Tonopah, Ford.
 35524...B. I. Barlow, Goldfield, Dodge.
 35526...B. Jungfer, Goldfield, Stoddard-Dayton.
 35526...Wm. H. Lange, Gardnerville, Buick.
 35527...C. C. Turner, Wellington, Ford.
 35528...H. Dieterich, Reno, Studebaker.
 35529...S. A. Talboe, Mason, Maxwell.
 35530...R. C. Jensen, Reno, Pierce Arrow.
 35531...Nevada Gas Co., Tonopah, Ford.
 35532...Chas. E. Noble, Mina, Studebaker.
 35533...J. P. Dickey, Yerington, Chevrolet.
 35534...Englert Bros., Elko, Franklin.
 35535...Fay Boles, Fernley, Ford.
 35536...Geo. W. Pierce, Reno, Chandler.
 35537...Goodwin & Son, Lurline, Franklin.
 35538...S. H. Wheeler, Reno, Studebaker.
 35539...F. E. Clock, Reno, Dodge.
 35540...A. Pasquale, Paradise Valley, Ford.
 35541...C. H. Abercrombie, Ely, Ford.
 35542...G. L. Huff, Pioche, Olympian.
 35543...J. R. Schulz, Carson City, Oldsmobile.
 35544...Mike Smith, Carson City, Maxwell.
 35545...Father Tubman, Reno, Overland.
 35546...N. J. Hayden, Omco, Studebaker.
 35547...Frank E. Bell, Omco, Ford.
 35548...Edw. A. Michel, Round Mtn., Dodge.
 35549...B. W. Kennedy, Tonopah, Marion.
 35550...C. B. Burkham, Hawthorne, Cadillac.
 35551...G. B. Day, Simpson, Dodge.
 35552...C. E. Day, Simpson, Cadillac.
 35553...C. E. Day, Simpson, Buick.
 35554...Mrs. L. Bowen, Reno, Ford.
 35555...R. T. Armstrong, Goldfield, Oakland.
 35556...S. R. Warren, Elko, Maxwell.
 35557...G. W. Kincart, Reno, Ford.
 35558...Wm. Hawkins, Palisade, Ford.
 35559...W. G. Lee, Battle Mountain, Ford.
 35560...Frank A. Arents, Simpson, Dodge.
 35561...C. A. Scott, Reno, Chevrolet.
 35562...Fred Neff, Rochester, Ford.
 35563...Nev. Bee & Honey Co., Lovelock, Ford.
 35564...Nev. Bee & Honey Co., Lovelock, Ford.
 35565...Nev. Bee & Honey Co., Lovelock, Ford.
 35566...J. C. Tucker, Winnemucca, Ford.

- 35567...Geo. T. Oliver, Elko, Dodge.
 35568...Jower Land Co., Lovelock, Buick.
 35569...W. H. Cotant, Elko, Ford.
 35570...G. A. Nuthall, Las Vegas, Ford.
 35571...Carlo Cereghini, Palisade, Chevrolet.
 35572...Mrs. D. Nelson, Winnemucca, Stude.
 35573...E. A. Leach, Winnemucca, Reo.
 35574...Byrom Millner, Reno, Ford.
 35575...A. F. Stotts, Las Vegas, Overland.
 35576...A. F. Gegan, Reno, Haynes.
 35577...F. N. Fletcher, Carson City, Stude.
 35578...Mrs. Matilda Elliott, Tonopah, Stude.
 35579...Johnson & Becker, Winnemucca, G.M.C.
 35580...Lorenzo Recanzone, Paradise, Ford.
 35581...Pinson Bros., Golconda, Ford.
 35582...Chas. Recanzone, Paradise, Ford.
 35583...Bill Smith, Amos, Overland.
 35584...Nick Ginocchio, Reno, Mitchell.
 35585...J. F. May, Sparks, Dodge.
 35586...C. F. Cooper, Pyramid, Oakland.
 35587...Mrs. D. Morton, Reno, Oakland.
 35588...Cesar A. Ramelli, Reno, Chevrolet.
 35589...A. C. Coughlin, Reno, Buick.
 35590...Jos. Greenleaf, Goldfield, Ford.
 35591...Louis Sigmund, Goldfield, Studebaker.
 35592...C. W. Ravenscroft, Tonopah, Hupmo.
 35593...George Blatt, Tonopah, Dodge.
 35594...D. H. McNett, Dyer, Ford.
 35595...V. A. Tamney, Reno, Ford.
 35596...Dr. E. K. Smith, Lovelock, Liberty 6.
 35597...R. C. Browning, Tecoma, Overland.
 35598...Francis Byrne, Elko, Chevrolet.
 35599...Pete Gainsiansas, Ruth, Studebaker.
 35600...L. A. Fietz, Ely, National.
 35601...Sam Camankider, Ely, Buick.
 35602...Mrs. T. H. Harper, Sparks, Buick.
 35603...Mrs. S. B. Hill, Lovelock, Liberty.
 35604...A. J. Taylor, Reno, Ford.
 35605...F. L. Whims, Reno, Dodge.
 35606...Norman M. Cheney, Sparks, Ford.
 35607...Chas. T. Allier, Goldfield, Stutz.
 35608...Nev. Fish & Game Com., Verdi, Ford.
 35609...Jack H. Smith, Tonopah, Ford.
 35610...Maurice Mack, Minden, Hudson.
 35611...John Howells, Elko, Dodge.
 35612...David G. Kinnell, Sparks, Studebaker.
 35613...M. J. Main, Elko, Ford.
 35614...M. J. Main, Elko, Mercer.
 35615...A. C. Allee, Elko, Oldsmobile.
 35616...Maude N. Tranter, Reno, Studebaker.
 35617...Geo. W. Sears, Reno, Overland.
 35618...Scott Chamberlain, Fallon, Ford.
 35619...J. Q. Palmer, Mountain City, Buick.
 35620...Mrs. Esther Gault, Fallon, Maxwell.
 35621...J. F. Owens, Twin Springs (Elko), Fd.
 35622...Wm. Wennholdt, Minden, Buick.
 35623...M. Jacobsen, Gardnerville, Dodge.
 35624...Wallace Park, Gardnerville, Cadillac.
 35625...John Schrenkolt, Minden, Buick.
 35626...Claus Ehler, Gardnerville, Ford.
 35627...W. Cain, Reno, Ford.
 35628...H. W. Atcheson, Sweetwater, Overland.
 35629...J. W. Huley, Carson City, Ford.
 35630...Mrs. H. J. Hughes, Gerlach, Chevrolet.
 35631...Lawrence Masini, Yerington, Ford.
 35632...Lyman S. Burrell, Beatty, Ford.
 35633...J. B. Kendall, Goldfield, Cadillac.
 35634...G. B. Hartley, Goldfield, Maxwell.
 35635...Wm. Patrick M. Co., Manhattan, Ford.
 35636...Mrs. Leona George, Luckyboy, Ford.
 35637...Julius Sigmund, Winnemucca, Ford.
 35638...Nevada Sulphur Co., Sulphur, Stude.
 35639...E. N. Mitchell, Caliente, Ford.
 35640...A. R. Carville, Elko, Buick.
 35641...Ernest Hildebrant, Lovelock, Chevrolet.
 35642...Frank E. McCarty, Ruth, Saxon.
 35643...Geo. N. Gooding, Reno, Saxon 6.
 35644...John Cristani, Fallon, Chevrolet.
 35645...Ramon Arizathabaga, Fallon, Ford.
 35646...Roderick A. Colton, Las Vegas, Ford.
 35647...Joe C. Boyle, Reno, Maxwell.
 35648...Cliff Cooper, Smith, Chevrolet.
 35649...Mat Dromiack, Reno, Cadillac.
 35650...R. E. Leeper, Reno, Jeffrey.
 35651...R. P. Howell, Reno, Dodge.
 35652...Francis P. Walsh, Tonopah, Oldsmobile.
 35653...W. H. M. Hatton, Tonopah, Ford.
 35654...James A. McDonald, Verdi, Ford.
 35655...Dan F. Shorelin, Battle Mtn., Ford.
 35656...W. G. Emminger, Lo. Rochester, Ford.
 35657...Pete Corta, Elko, Hudson.
 35658...Pete Corta, Elko, Dorris.
 35659...A. M. Casey, Reno, Ford.
 35660...Milo C. McMillan, Reno, Buick.
 35661...Joe Aspilche, Reno, Reo.
 35662...Mrs. Leita Knouse, Reno, Pope-Hart.
 35663...C. H. Forsberg, Fallon, Dort.
 35664...C. L. Tobin, Winnemucca, Ford.
 35665...C. L. Tobin, Winnemucca, Overland.
 35666...C. O. Davies, Reno, Reo.
 35667...James M. Ryan, Elko, Chevrolet.
 35668...J. B. Wheeler, Pioche, Ford.
 35669...T. O. Jones, Rowland, Cadillac.
 35670...H. Coffin, Carson City, Chevrolet.
 35671...F. W. Simpson, Simpson, Dodge.
 35672...W. H. Metscher, Carson City, Overland.
 35673...Dayton Pla. Rec. Co., Dayton, Overland.
 35674...A. G. Spencer, Reno, Dodge.
 35675...H. G. Hughes, Gerlach, Federal.
 35676...Pacific Tung Co., Inc., Mill City, Fd.
 35677...Pacific T. Co., Inc., Mill City, Buick 6.
 35678...Mrs. O. H. Sonne, Yerington, Premier.
 35679...O. A. Dockham, Reno, Reo.
 35680...W. F. Burgy, Rogerson, Ida., Haynes.
 35681...Harry R. Johnson, Tonopah, GMC.
 35682...Joe Gerard, Reno, Chevrolet.
 35683...E. C. Burney, Verdi, Studebaker.
 35684...A. J. Byrd, Lower Rochester, Knox.
 35685...H. I. Talcott, Unionville, Ford.
 35686...Frank Tessier, Lovelock, Buick.
 35687...Pete Anker, Lovelock, Reo.
 35688...Charles Harvey, Carlin, Chevrolet.
 35689...C. A. Lee, Battle Mountain, Ford.
 35690...R. E. Gayer, Golconda, Ford.
 35691...Chris. Theusen, Sparks, Ford.
 35692...J. F. Tilton, Reno, Ford.
 35693...T. B. Camp, Fallon, Chevrolet.
 35694...L. L. Hudson, Fallon, Dort.
 35695...Kirchner Bros, Paradise, Ford.
 35696...Steve Ferraro, Paradise, Ford.
 35697...Pahrump Valley Co., Pahrump, Ford.
 35698...George Heidman, Gardnerville, Dodge.
 35699...Mrs. L. B. Olds, Wellington, Chevrolet.
 35700...A. M. Boyce, Yerington, Ford.
 35701...Mrs. E. C. Peterson, Carson City, Over.
 35702...Fred Santana, Wabuska, Buick.
 35703...Samuel S. Arentz, Simpson, Buick.
 35704...D. T. Donovan, Tonopah, Chevrolet.
 35705...Merle Persia, Mill City, Ford.
 35706...W. D. Zuick, Winnemucca, Ford.
 35707...J. Kirwin, Winnemucca, Ford.
 35708...M. Cassajous, Winnemucca, Ford.
 35709...A. Ruckteschler, Winnemucca, Ford.
 35710...A. Ruckteschler, Winnemucca, Stude.
 35711...Robert Hogan, Austin, Overland.
 35712...L. Vanucci, Reno, Ford.
 35713...S. D. Conger, Overton, Ford.
 35714...H. M. Townner, Las Vegas, Chevrolet.
 35715...M. F. Turnage, Carson City, Ford.
 35716...Axtell Ex. Co., Virginia City, Ford.
 35717...John Casser, Gardnerville, Chevrolet.
 35718...Millan Mark, Reno, Pilot.
 35719...H. R. Mighels, Carson City, Ford.
 35720...Harry McNamara, Tonopah, Dodge.
 35721...Angelo Cobo, Reno, Ford.
 35722...C. K. Beaman, Wellington, Buick.
 35723...Chris Beck, Lovelock, Overland.
 35724...Nev. Wilson M. Co., Fallon, Chevrolet.
 35725...Clyde F. Bair, Fallon, Overland.
 35726...Chas. Engle, Mill City, Ford.
 35727...Cadet Anxo, Elko, Hudson.
 35728...E. V. Black, Deeth, Dodge.
 35729...John Carter, Elko, Hudson.
 35730...C. W. Warner, Elko, International.
 35731...Frank G. Evans, Lovelock, Chevrolet.
 35732...Anton Lassen, Lovelock, Hupmobile.
 35733...Harry E. Young, Reno, Reo.
 35734...J. W. Gerow, M.D., Reno, Reo.
 35735...Bill Spirow, Las Vegas, Jackson.
 35736...T. W. Foster, Sulphur, Hupmobile.
 35737...W. S. Van Sandt, Reno, Kissel.
 35738...Frankie Byrnes, Paradise, Ford.
 35739...Joe Lang, Elko, E.M.F.
 35740...Wm. Lauritzen, Battle Mtn., Ford.
 35741...Thos Griffin, Carlin, Ford.
 35742...Thos. Griffin, Carlin, Chandler.

- 35743....A. C. Harden, Reno, Ford.
 35744....J. Etchegegoyhen, Golconda, Ford.
 35745....Mitchel Cogega, Winnemucca, Oldsmo.
 35746....A. T. Lay, Winnemucca, Ford.
 35747....Jesus Aranguena, Winnemucca, Ford.
 35748....Mitchel Cogega, Winnemucca, Ford.
 35749....G. E. Hockenbrock, Winnemucca, Ford.
 35750....G. D. Howe, Winnemucca, Ford.
 35751....Nev. Wonder Co., Belmont, Apperson.
 35752....James Herrin, Yerington, Ford.
 35753....J. H. Denny, Tonopah, E.M.F.
 35754....Nevada Stage Co., Goldfield, Cadillac.
 35755....Chris. Hansen, Goldfield, Ford.
 35756....Gray, Reid, Wright Co., Reno, Chev.
 35757....James A. Stuard, Gardnerville, Ford.
 35758....American Carrara M. Co., Carrara, Ov.
 35759....Toney Samedy, Paradise, Reo.
 35760....C. R. Squires, Winnemucca, Cadillac.
 35761....Chas. W. Hoag, Reno, Buick.
 35762....T. Martin, Junco, Ford.
 35763....L. Hawcroft, Reno, Studebaker.
 35764....R. A. Crosby, Ely, Studebaker.
 35765....R. P. Arnold, Ely, Hudson.
 35766....W. A. Trimbrell, Cherry Creek, Ford.
 35767....P. Walsh & Sons, Inc., Austin, Kissel.
 35768....Mrs. R. E. Bray, Fallon, Studebaker.
 35769....D. D. Besse, Fallon, Metz.
 35770....Louis Reymont, Midas, Ford.
 35771....Chas. E. Howard, Fallon, Ford.
 35772....Mrs. S. Jensen, Reno, Oakland.
 35773....E. J. McManus, Reno, Chandler.
 35774....T. W. Dove, Tuscarora, Dodge.
 35775....Laura B. Miller, Reno, Studebaker.
 35776....F. S. Gedney, Elko, Hudson.
 35777....Emil Peraldo, Paradise, Ford.
 35778....J. B. Case Co., Paradise, Ford.
 35779....W. H. Elbrecht, Elko, Saxon.
 35780....W. H. Elbrecht, Elko, Saxon.
 35781....W. H. Davis, Sparks, Ford.
 35782....Union L. & C. Co., Tuscarora, Buick.
 35783....Union L. & C. Co., Tuscarora, Nash.
 35784....Rufino Lordi, Tuscarora, Dodge.
 35785....E. E. Avery, Tuscarora, Ford.
 35786....Union L. & C. Co., Tuscarora, Ford.
 35787....Union L. & C. Co., Tuscarora, Ford.
 35788....Roy Woodin, Deeth, Ford.
 35789....Alex. Gardner, Elko, Overland.
 35790....Sam Hiller, Beowawe, Chevrolet.
 35791....E. E. Krefz, Virginia City, Cadillac.
 35792....E. Allison, Tonopah, Ford.
 35793....L. F. Iriart, Reno, Buick.
 35794....C. Jepperson, Gardnerville, Studebaker.
 35795....W. H. Schweis, Fallon, Buick.
 35796....C. B. Gefeke, Gardnerville, Ford.
 35797....C. B. Gefeke, Gardnerville, Ford.
 35798....C. B. Gefeke, Gardnerville, Internl.
 35799....A. L. Wehlisch, Tonopah, Oldsmobile.
 35800....Salles & Ricci, Yerington, Overland.
 35801....Geo. D. Frazer, Yerington, Hupmobile.
 35802....Joe J. McCullah, Luning, Velie.
 35803....P. V. Davison, Tonopah, Dodge.
 35804....John Zabriskie, Belmont, Chevrolet.
 35805....Pierre Iriart, Reno, Buick.
 35806....A. S. Pappas, Reno, Hudson.
 35807....Al. Drew, Reno, Haynes.
 35808....Albert Fischer, Reno, Buick.
 35809....Geo. L. Thompson, Sparks, Ford.
 35810....Thos. A. Chester, Bunkerville, Buick.
 35811....C. B. French, Currie, Ford.
 35812....L. T. Anderson, Deeth, Oldsmobile.
 35813....L. T. Anderson, Deeth, Ford.
 35814....Con. Sullivan, Elko, Dodge.
 35815....Will Goodale, Deeth, Ford.
 35816....A. R. Powers, Reno, Overland.
 35817....C. F. Buffington, Overton, Ford.
 35818....John W. Richard, Alamo, Metz.
 35819....H. C. Leavitt, Reno, Ford.
 35820....H. J. Wurzbarger, Reno, Haynes.
 35821....H. C. Metz, Elko, Oldsmobile.
 35822....Virgil Pasquale, Golconda, Ford.
 35823....E. J. Questa, Reno, Oakland.
 35824....Walter N. Wheeler, Reno, Chevrolet.
 35825....Carol E. Fall, Mina, Saxon 6.
 35826....Mrs. Kate Gage, Smith, Ford.
 35827....J. D. Manyhouse, Goldfield, Ford.
 35828....Palace H. & G. Co., Goldfield, Chevrolet.
 35829....H. E. McClain, Goldfield, Ford.
 35830....Chas. T. Brown, Tonopah, Dodge.
 35831....E. C. Marty, Tonopah, Ford.
 35832....B. J. Spaulding, Tonopah, Ford.
 35833....Griszly Creek Ice Co., Reno, Cadillac.
 35834....Flamino Tabaraci, Tonopah, Ford.
 35835....F. H. Bruce, Tonopah, Pilot.
 35836....Geo. W. Jordan, Tonopah, Ford.
 35837....W. P. George, Reno, Mercer.
 35838....A. P. Johnson, Johnnie, Ford.
 35839....A. P. Johnson, Johnnie, Ford.
 35840....Dr. J. L. McCarthy, Goldfield, Stude.
 35841....Harry T. Coffey, Las Vegas, Buick.
 35842....D. J. McNamara, Reno, Buick.
 35843....P. M. Crow, Carson City, Buick.
 35844....Geo. C. Hoffman, Gardnerville, Ford.
 35845....Sam Jones, Wells, Ford.
 35846....J. B. Dixon, Reno, Empire.
 35847....James Gladding, Md. House, Maxwell.
 35848....Gus A. Juargens, Packard, Ford.
 35849....W. W. Page, Baker, Ford.
 35850....A. M. Delmuc, Pioche, Hupmobile.
 35851....A. M. Swallow, Baker, Ford.
 35852....Mrs. C. C. Bray, Las Vegas, Ford.
 35853....A. Margaroli, Yerington, Ford.
 35854....Stacy Taylor, Goldfield, Buick.
 35855....F. O. Gilbert, Tonopah, Overland.
 35856....B. G. Blesdale, Yerington, Overland.
 35857....G. E. Murray, Battle Mountain, Reo.
 35858....Humboldt Soda Wks., Winnemucca, Fd.
 35859....Chas. Zorio, Paradise, Ford.
 35860....John Forgnone, Paradise, Ford.
 35861....Mrs. D. M. Jackson, Winnemucca, Fd.
 35862....Geo. Wood, Winnemucca, International.
 35863....American M. & E. Co., Inlay, Cok.
 35864....Joaquin Elizondo, Winnemucca, Dodge.
 35865....R. E. Rockwell, Elko, Chevrolet.
 35866....R. E. Ladd, Austin, Buick.
 35867....John M. Hiskey, Austin, Mitchell 6.
 35868....Tognini Bros., Cave Creek, Buick.
 35869....Steptoe Live Stock Co., Wells, Ford.
 35870....Geo. Russell, Battle Mountain, Ford.
 35871....P. S. Brooks, Battle Mtn., Cadillac.
 35872....J. S. Smith, McGill, Ford.
 35873....G. A. McDonald, Ely, Reo.
 35874....Frank Fisher, Ruth, Maxwell.
 35875....W. H. Woods, Ely, White.
 35876....E. S. Harriman, Fallon, Ford.
 35877....Mrs. H. S. Riker, Reno, Overland.
 35878....W. K. Nelson, Reno, Hudson.
 35879....George Humphrey, Reno, Hudson.
 35880....J. W. Scott, Reno, Buick.
 35881....A. N. Perry, Ruth, Packard.
 35882....Leslie Garcia, Elko, Ford.
 35883....Paul Fischer, Manhattan, Ford.
 35884....J. H. Glasier, Wichman, Ford.
 35885....H. A. Steele, Wells, Buick.
 35886....J. A. Dyel, Wells, Buick.
 35887....Alma Thueson, Wells, Ford.
 35888....Mrs. Dorothy Hyde, Metropolis, Ford.
 35889....A. Harriet, Elko, Hudson.
 35890....E. Gardner, Deeth, Ford.
 35891....Baker Livestock Co., Baker, Ford.
 35892....Baker Livestock Co., Baker, Ford.
 35893....Guy Saval, Baker, Marmon.
 35894....P. M. Baker, Baker, Hupmobile.
 35895....Geo. G. Baker, Baker, Reo.
 35896....John J. Plesman, Reno, Buick.
 35897....L. B. Spencer, Mina, Ford.
 35898....Dave Erickson, Reno, Chevrolet.
 35899....Divide Con. M. Co., Tonopah, Fd.
 35900....Gold Zone Divide M. Co., Tonopah, Fd.
 35901....C. H. Warfield, Yerington, Ford.
 35902....W. R. Calvert, Gold Hill, Ford.
 35903....Dell Hammond, Goldfield, Buick.
 35904....A. C. Dickel, Goldfield, Buick.
 35905....Frank J. Frey, Humboldt, Buick.
 35906....Frank Yuanda, Golconda, Overland.
 35907....John R. Melrose, Hawthorne, Overland.
 35908....George Foros, Ludwig, Dort.
 35909....Fred Strosnider, Yerington, Buick.
 35910....W. A. Hollis, Elko, Ford.
 35911....Frank Cook, Kimberly, Ford.
 35912....Chas. Hamilton, Kimberly, Ford.
 35913....D. C. Perry, Kimberly, Hudson.
 35914....Wyoming M. & M. Co., Ely, Dodge.
 35915....Ernest Gentry, Caliente, Ford.
 35916....Wallace Bailey, Eureka, Ford.
 35917....U. S. Indian Irrig. Ser. Schurz, Ford.
 35918....John E. Amenda, Reno, Empire.

- 35919.....H. C. Lattin, Fallon, Ford.
 35920.....August Pasquale, Golconda, Ford.
 35921.....Elko Water Works, Elko, Lippard-S.
 35922.....Carl Anderson, Battle Mtn., Ford.
 35923.....Henry Riter, Franktown, Willys 6.
 35924.....H. McCollum, Reno, Maxwell.
 35925.....Wm. E. Orr, Las Vegas, Hupmobile.
 35926.....Oscar McMillan, Lovelock, Ford.
 35927.....Andrew Carty, Sparks, Overland.
 35928.....F. J. Sauer, Washoe, Ford.
 35929.....George Sauer, Reno, Reo.
 35930.....G. B. Colombo, Reno, Reo.
 35931.....T. F. Lambert, Reno, Ford.
 35932.....Mrs. Clara Pearce, Reno, Hupmobile.
 35933.....Grizzly Creek Co., Reno, Cadillac.
 35934.....Mrs. L. Avanzino, Reno, Reo.
 35935.....Edna Freer, Carrara, Ford.
 35936.....Gold Wedge Divide M. Co., Tonopah, Fd.
 35937.....C. Nelson, Schurz, Chevrolet.
 35938.....Rev. D. B. Murphy, Virginia City, Reo.
 35939.....C. F. Duval, Virginia City, Winton 6.
 35940.....A. J. Stinson, Carson City, Cadillac.
 35941.....Kate Frisbie, Carson City, Studebaker.
 35942.....Mrs. C. Foote, Gold Hill, Hupmobile.
 35943.....Geo. Delasanta, Sparks, Studebaker.
 35944.....J. W. Black, Virginia City, Maxwell.
 35945.....Frank Rosaschi, Yerington, Dodge.
 35946.....Mrs. E. C. Eustace, Mina, Overland.
 35947.....C. M. Compton, Luning, Reo 5.
 35948.....George Pierson, Goldfield, Schacht.
 35949.....R. Tomas, Goldfield, Maxwell.
 35950.....Chet Carpenter, Goldfield, Buick 4.
 35951.....M. F. Hill, Goldfield, Reo 6.
 35952.....Julia N. Theo, Goldfield, Overland.
 35953.....G. D. Miles, Reno, Maxwell.
 35954.....M. Filippini, Beowawe, Overland.
 35955.....C. F. Lee, Tecoma, Reo.
 35956.....C. A. Ramsey, McGill, Ford.
 35957.....Miles Wandling, Austin, Ford.
 35958.....John Collins, Austin, Ford.
 35959.....Mrs. Dr. C. W. West, Elko, Overland.
 35960.....Pedro Seminario, Elko, Buick.
 35961.....O. J. Streeter, Elko, Ford.
 35962.....O. A. Sturner, Elko, Reo.
 35963.....O. M. Kinsey, Elko, Ford.
 35964.....Henry Aronson, Reno, Studebaker.
 35965.....W. D. Campbell, Steptoe, Case.
 35966.....J. N. Tedford, Fallon, Haynes.
 35967.....E. P. Cullinan, Tonopah, Overland.
 35968.....Peter Fabbli, Tonopah, Overland.
 35969.....E. C. Loftus, Tonopah, Reo.
 35970.....Mrs. T. W. Bissett, Reno, Ford.
 35971.....W. J. Fancher, Manhattan, Dodge.
 35972.....Sam Watkins, Winnemucca, Ford.
 35973.....R. D. Sellers, Winnemucca, Ford.
 35974.....Gideon Forgnone, Paradise, Ford.
 35975.....Peter Etchart, Junco, Ford.
 35976.....Fred Urzanzui, Winnemucca, Case.
 35977.....L. O. Hawkins, Winnemucca, Mitchell.
 35978.....E. A. Gransuist, Winnemucca, Dort.
 35979.....T. A. Brandon, Winnemucca, Buick.
 35980.....W. L. Lewis, Carson City, Buick.
 35981.....Mrs. M. E. Graves, Reno, Ford.
 35982.....Mrs. P. H. Peterson, Carson City, Over.
 35983.....Compton Bros., Sweetwater, Ford.
 35984.....Albert Pearl, Virginia City, Federal.
 35985.....E. J. Lye, Paradise, Ford.
 35986.....E. C. Lye, Paradise, Case.
 35987.....P. McDonnell, Fallon, Hupmobile.
 35988.....Mrs. E. J. Bettles, Goldfield, Dodge.
 35989.....E. J. Shaffer, Tonopah, Ford.
 35990.....Mrs. W. B. Mack, Reno, Studebaker.
 35991.....F. M. Steinheimer, Reno, Studebaker.
 35992.....Thos. Duke, Reno, Chandler.
 35993.....Goldfield Tailing Assn., Goldfield, Ford.
 35994.....J. R. Eby, Elko, Dodge.
 35995.....Pete Lera, Elko, Overland.
 35996.....L. B. Carvalho, Elko, Dodge.
 35997.....Evans M. & M. Co., Las Vegas, Ford.
 35998.....Robinson Bros., Osceola, Ford.
 35999.....Robinson Bros., Osceola, Reo.
 36000.....Athens Mercantile Co., Ely, Ford.
 36001.....Manuel Urritia, Elko, Dodge.
 36002.....Deronda H. Downs, Sparks, National.
 36003.....Mrs. J. M. Mawer, Reno, Studebaker.
 36004.....Mrs. Pearl R. Steele, Reno, Overland.
 36005.....M. C. Klosky, Reno, Buick.
 36006.....James Daniel, Reno, Ford.
 36007.....P. Anderson, Reno, National.
 36008.....Mutual Cream Co., Reno, Continental.
 36009.....M. Sperlich, Carlin, Maxwell.
 36010.....S. Milisich, Reno, Reo.
 36011.....Ira McKay, Tonopah, Ford.
 36012.....James Herald, Tonopah, Ford.
 36013.....T. F. Harnedy, Johnnie, Ford.
 36014.....Henry Rahe, Carson City, Ford.
 36015.....Fred R. Allen, Ely, Ford.
 36016.....Fred R. Allen, Ely, Ford.
 36017.....Mike Urutta, Ely, Dodge.
 36018.....R. R. Bell, McGill, Dodge.
 36019.....Paul Hours, McGill, Vim.
 36020.....The Griffin Company, Ely, Packard.
 36021.....A. R. Shepard, Ely, Dodge.
 36022.....Bob Crawford, Tuscarora, Pope-Hart.
 36023.....A. N. Salisbury, Reno, Reo 6.
 36024.....Carl C. Barnes, Reno, Hudson.
 36025.....Will O. Bay, Reno, Ford.
 36026.....Chas. Nofsinger, Winnemucca, Ford.
 36027.....Alejo Yraguen, McDermitt, Buick.
 36028.....S. Siard, Winnemucca, Federal.
 36029.....J. A. Carlson, Cherry Creek, Dodge.
 36030.....John A. Cardano, Cherry Creek, Ford.
 36031.....Otto Barton, Searchlight, Cadillac.
 36032.....R. Pengelly, Wells, Ford.
 36033.....Don Maestretti, Austin, Hudson.
 36034.....Lew Broady, Wonder, Ford.
 36035.....G. W. Goff, Battle Mtn., Ford.
 36036.....Christine Kearsley, St. Thomas, Ford.
 36037.....A. Lauritsen, Battle Mountain, Ford.
 36038.....Glenn D. Cook, Oreana, Thomas.
 36039.....Geo. McNemee, Elko, Maxwell.
 36040.....Albert Frehner, St. Thomas, Ford.
 36041.....John A. Wist, Manhattan, Ford.
 36042.....John Frank Nash, Verdi, Saxon.
 36043.....V. Guisti, Tonopah, Overland.
 36044.....Claude Mealman, Belmont, Ford.
 36045.....C. Wederts, Yerington, Ford.
 36046.....J. N. Yokoyama, Yerington, Buick.
 36047.....E. H. Masterson, Yerington, Ford.
 36048.....Rudolph Parker, Tonopah, Oldsmobile.
 36049.....Fred Santina, Yerington, Maxwell.
 36050.....Louisiana Con. M. Co., Tonopah, Reo.
 36051.....Manuel Goni, Carson City, Willys.
 36052.....State Engineer's Office, Carson, Dodge.
 36053.....C. R. Morris, Virginia City, Overland.
 36054.....W. H. Snyder, Goldfield, Overland.
 36055.....C. R. Archer, Yerington, Dodge.
 36056.....F. F. Dailey, Mason, Paige-Detroit.
 36057.....A. A. Douglass, Smith, Ford.
 36058.....W. H. Allured, Jr., Searchlight, P.-A.
 36059.....Seymour Case, Carson City, Overland.
 36060.....Ethel E. Miller, Reno, Reo.
 36061.....Thomas Toyn, Lee, Dodge.
 36062.....O. P. Ankeny, Elko, Ford.
 36063.....W. S. Dupont, Elko, Ford.
 36064.....Jacob Conrad, Lamolle, Maxwell.
 36065.....B. Achabal, Tuscarora, Studebaker.
 36066.....B. E. Walker, Ruth, Dodge.
 36067.....John Stamos, Tobar, Studebaker.
 36068.....A. W. Stone, Carlin, Dodge.
 36069.....W. M. Wantland, Reno, Buick.
 36070.....Len Stone, McGill, Dodge.
 36071.....Harry Hill, McGill, Hupmobile.
 36072.....Jay H. Clemons, Reno, Buick.
 36073.....C. W. Pearl, McDermitt, Ford.
 36074.....C. C. Larson, Lovelock, Ford.
 36075.....C. F. Gibson, Elko, Ford.
 36076.....John H. Anderson, Reno, Reo.
 36077.....A. G. Jones, Simpson, Ford.
 36078.....M. C. Shirley, Carson City, Buick.
 36079.....Neil West, Reno, Mitchell.
 36080.....C. A. Look, Carson City, Monroe.
 36081.....Union Con. M. Co., Virginia City, Cad.
 36082.....Edwin Marshall, Overton, Ford.
 36083.....Lee Johnson, O'Neil, Ford.
 36084.....John W. Wedge, Alamo, Ford.
 36085.....Geo. W. Richards, Alamo, Ford.
 36086.....C. C. Larson, Lovelock, Ford.
 36087.....Jewett Randolph, Lovelock, Buick.
 36088.....Max Arnold, Lee, Hudson.
 36089.....Jess Palmer, Sharp, Willys-Overland.
 36090.....D. Hazan, Cherry Creek, Ford.
 36091.....J. F. Butler, Reno, American.
 36092.....Jack Cross, Reno, Ford.

- 36093.....John Carlin, Las Vegas, Ford.
 36094.....George Johnny, Stillwater, Ford.
 36095.....John Wall, Goldfield, Ford.
 36096.....Frank Zenklusen, Goldfield, Ford.
 36097.....M. M. Manley, Reno, Hupmobile.
 36098.....Wm. C. Menking, Tonopah, Dodge.
 36099.....Clifford Cooper, Smith, Chevrolet.
 36100.....August Bunkowski, Smith, Ford.
 36101.....August Manke, Smith, Ford.
 36102.....J. R. Mendenhall, Searchlight, Paige.
 36103.....Richard Finn, Tonopah, Ford.
 36104.....C. W. Spencer, Goldfield, Buick.
 36105.....B. Lasio, Goldfield, Buick.
 36106.....Thos. J. Marks, Virginia City, Reo.
 36107.....Arnold Johnson, Verdi, Ford.
 36108.....Frank J. Cran, Tonopah, Ford.
 36109.....John Head, Tonopah, Ford.
 36110.....James Duffy, Tonopah, Ford.
 36111.....Frank Nelson, Tonopah, Auburn.
 36112.....Wm. Catton, Carson City, Reo.
 36113.....J. C. Jones, Fallon, Maxwell.
 36114.....J. L. Vandiver, Wells, Dodge.
 36115.....Walter B. Vickers, Tonopah, Hupmo.
 36116.....A. L. Burkhardt, McGill, Ford.
 36117.....H. W. Edwards, Ely, Paige.
 36118.....Mike Brunett, Tonopah, Locomobile.
 36119.....Tonopah Kawich M. Co., Tonopah, Fed.
 36120.....Tonopah Kawich M. Co., Tonopah, Klei.
 36121.....Tonopah Kawich M. Co., Tonopah, Klei.
 36122.....Bonanza Mines Co., Baker, Ford.
 36123.....Mrs. Julia E. Carvan, Reno, Buick.
 36124.....S. Parlante, Sparks, Mitchell.
 36125.....George Series, Fernley, Maxwell.
 36126.....I. E. Wines, Ruby Valley, Buick.
 36127.....J. B. Wines, Ruby Valley, Ford.
 36128.....J. B. Daniels, Lovelock, Pullman.
 36129.....L. E. Cornelius, Mina, Ford.
 36130.....Wm. B. Gillespie, Gardnerville, Chev.
 36131.....W. F. Dressler, Minden, Buick.
 36132.....J. G. Rae, Packard, Ford.
 36133.....John Zeigler, Ruth, Ford.
 36134.....Geo. W. Wilson, Reno, Overland.
 36135.....O. L. Riddle, Carlin, Ford.
 36136.....R. H. Schwartz, Paradise, GMC.
 36137.....Theodore Wellar, Paradise, Ford.
 36138.....Sidney C. Foster, Reno, Oakland.
 36139.....Martin Tomstad, Reno, Ford.
 36140.....John McDermott, Halleck, Ford.
 36141.....S. B. Myer, Reno, Willys-Knight.
 36142.....Jas. T. McKay, Hudson, Buick 6.
 36143.....Mrs. Annie Mullens, Tonopah, Hupmo.
 36144.....Fred I. Tyler, Winnemucca, Ford.
 36145.....Wm. Stock Farming Co., Paradise, Fd.
 36146.....C. T. Smith, Inlay, Ford.
 36147.....Saturino Alcora, Winnemucca, King 8.
 36148.....Frank Herline, Winnemucca, GMC.
 36149.....Frank Herline, Winnemucca, GMC.
 36150.....N. Adamson, Winnemucca, Buick.
 36151.....F. B. Stewart, Paradise, Case.
 36152.....Leandro Oroz, Platora, Buick.
 36153.....W. Wong, Golconda, Overland.
 36154.....Mrs. Taska Slater, Minden, Oldsmobile.
 36155.....C. J. Miller, Reno, Cadillac.
 36156.....Comstock M. & Co., Silver, Speedwell.
 36157.....R. A. Hankammer, Carson City, Chev.
 36158.....Wm. Wise, Carson City, Chevrolet.
 36159.....J. M. Ward, Sheephead, Buick.
 36160.....C. G. Foster, Simpson, Dodge.
 36161.....Chas. C. Blake, Tonopah, Ford.
 36162.....A. Tamagui, Yerington, Hupmobile.
 36163.....G. R. Liville, Sparks, Cadillac.
 36164.....Dr. M. S. Sweet, Reno, American.
 36165.....Adna Ferrin, Metropolis, Ford.
 36166.....John A. Watts, Wells, Ford.
 36167.....Lewis Sharp, Arthur, Studebaker.
 36168.....S. L. Wines, Ruby Valley, Maxwell.
 36169.....Samuel T. Wines, Ruby Valley, Buick.
 36170.....L. E. Black, Battle Mountain, Ford.
 36171.....H. L. Mayfield, Lovelock, Chevrolet.
 36172.....Geo. Mitchell, Jiggs, Buick.
 36173.....Abe Zetony, Reno, Maxwell.
 36174.....G. W. Quizeley, Tonopah, Chevrolet.
 36175.....Grace L. Harris, Reno, Franklin.
 36176.....Ralph E. Wilson, Reno, Ford.
 36177.....Mrs. M. M. Harms, Reno, Studebaker.
 36178.....Mrs. C. W. Hansen, Carlin, Overland.
 36179.....J. P. Ryan, Reno, Overland.
 36180.....L. Arndt, Reno, Ford.
 36201.....A. C. Barr, Ely, Buick.
 36182.....Geo. Giannopolis, McGill, Hupmobile.
 36183.....Paul Kranovich, Ruth, Paige.
 36184.....Doningo Acorda, Austin, Buick.
 36185.....Wern Dunston, Austin, Ford.
 36186.....William T. Knight, McGill, Ford.
 36187.....Mrs. Ed. Carville, Elko, Dodge.
 36188.....Slim Scott, Halleck, Ford.
 36189.....Ed. E. Smith, Reno, Ford.
 36190.....Haabrouck Mining Co., Tonopah, Ford.
 36191.....Henry Peters, Jiggs, Ford.
 36192.....David Levitt, Reno, Ford.
 36193.....S. W. Belford, Reno, Locomobile.
 36194.....E. G. Folsom, Carson City, Ford.
 36195.....J. E. Renfro, Mina. No. 32135 lost in transit.
 36196.....Frank Butler, Tonopah, Buick.
 36197.....A. L. Padgett, Dyer, Peerless.
 36198.....Wm. J. Gerry, Virginia City, Overland.
 36199.....Mrs. Ed. Renny, Reno, Maxwell.
 36200.....Dr. Rex A. Grider, Reno, Liberty.
 36201.....A. C. Barr, Ely, Buick.
 36202.....O. E. O'Hara, East Ely, Ford.
 36203.....Dave Elliot, Ely, Ford.
 36204.....Wallie J. Rhoads, Las Vegas, Dodge.
 36205.....W. S. Rhoads, Las Vegas, Dodge.
 36206.....Mrs. L. Butler, Elko, Studebaker.
 36207.....Carl Gilberg, Elko, Kiesel.
 36208.....Dr. C. Alexander, Elko, Studebaker.
 36209.....Jessie Ward, Elko, Studebaker.
 36210.....J. B. Critchley, Elko, Dodge.
 36211.....Wm. Henroid, Parker, Ford.
 36212.....John W. Henroid, Parker, Ford.
 36213.....P. E. Hatch, Deeth, Ford.
 36214.....E. W. Griffith, Las Vegas, Ford.
 36215.....Mrs. S. B. Nay, Las Vegas, Ford.
 36216.....H. N. Anderson, Las Vegas, Ford.
 36217.....F. A. Goming, Beowawe, Dodge.
 36218.....L. C. Fisher, Fallon, Grant 6.
 36219.....E. W. Butler, Reno, Cadillac.
 36220.....Walter Bowler, Tonopah, Hupmobile.
 36221.....J. H. Hulsemann, Tonopah, Reo.
 36222.....Chris. Sorenson, Tonopah, Ford.
 36223.....V. M. Ambrose, Goldfield, Overland.
 36224.....V. M. Ambrose, Goldfield, Overland.
 36225.....S. J. Box, Tonopah, Ford.
 36226.....Water Co. of Tonopah, Tonopah, Ford.
 36227.....C. G. Sellman, Reno, Overland.
 36228.....H. R. Kolster, Reno, Cadillac.
 36229.....B. L. Park, Sheridan, Buick.
 36230.....Liberty Divide M. Co., Tonopah, Dodge.
 36231.....L. Haffey, Virginia City, Buick.
 36232.....Citizens L. C. & S. Co., Yerington, Reo.
 36233.....R. G. Jones, Tonopah, Ford.
 36234.....F. H. Minnick, Tonopah, Hupmobile.
 36235.....E. M. Lewis, Goldfield, Ford.
 36236.....Douglas & Nay, Tonopah, Ford.
 36237.....K. W. Doan, Tonopah, Overland.
 36238.....Caldevale & Collet, Tonopah, Ford.
 36239.....W. C. McFarland, Tonopah, Reo.
 36240.....D. E. Sayre, East Ely, Mitchell.
 36241.....Frank G. Peterson, Fallon, Staver.
 36242.....G. Peraldo, Paradise, Ford.
 36243.....Southeastern M. Co., Las Vegas, Dodge.
 36244.....H. Whitlock, Ely, Ford.
 36245.....J. A. Martin, East Ely, Ford.
 36246.....J. H. English, McGill, Ford.
 36247.....T. F. Moran, Reno, Ford.
 36248.....A. E. Cheney, Reno, Cadillac.
 36249.....Mrs. C. Barrett, Reno, Dodge.
 36250.....Tobias Boel, Reno, Oldsmobile.
 36251.....H. E. Fretz, Ely, Ford.
 36252.....W. J. Wolverton, Arthur, Ford.
 36253.....Chas. S. Chandler, Ely, Franklin.
 36254.....Gurney Gordon, Reno, Ford.
 36255.....C. O. Dangberg, Minden, Buick.
 36256.....C. O. Dangberg, Minden, Ford.
 36247.....W. H. Barton, Pioneer, Ford.
 36258.....Mrs. Katherine M. Moran, Tonopah, Fd.
 36259.....Ben F. Wade, Virginia City, Overland.
 36260.....H. M. Lane, Deeth, Overland.
 36261.....John Wholey, Austin, Ford.
 36262.....A. B. Grace, Halleck, Dodge.
 36263.....J. Dillon, Denio, Oregon, Ford.
 36264.....C. D. DeLorme, Lo. Rochester, Buick.

- 36265.....John B. Dunstan, Austin, Ford.
 36266.....Martin Schaub, Fernley, Ford.
 36267.....B. F. Soden, Reno, Chevrolet.
 36268.....D. Collis, Reno, Case.
 36269.....Gertrude C. Caffrey, Reno, Overland.
 36270.....Southeastern M. Co., Las Vegas, Jeffrey.
 36271.....Mrs. M. Evenson, Tonopah, Overland.
 36272.....L. P. McKelvey, Tonopah, Chandler.
 36273.....Martin D. Lynch, Gold Hill, Oakland.
 36274.....S. B. Kasper, Golconda, Dodge.
 36275.....Ernest Bath, Carson City, Ford.
 36276.....Ed. Lupien, Winnemucca, Ford.
 36277.....Frank Roth, Winnemucca, Ford.
 36278.....W. F. Stanley, Denio, Oregon, Ford.
 36279.....Earl Petro, Winnemucca, Ford.
 36280.....U. N. & I. Tel. Co., Winnemucca, Ford.
 36281.....Genevieve Lyng, Winnemucca, Ford.
 36282.....Mitchell Bedart, Winnemucca, Ford.
 36283.....P. J. Haynes, Winnemucca, Ford.
 36284.....Joe Harvath, Winnemucca, Ford.
 36285.....Joe Jaca, Winnemucca, Reo.
 36286.....Beth Warren, Winnemucca, Dodge.
 36287.....Mrs. Jas. Marr, Winnemucca, Stude.
 36288.....W. L. Pearce, Winnemucca, Stude. 6.
 36289.....Ed. Mattinson, Las Vegas, Ford.
 36290.....A. J. Byrd, Lower Rochester, Ford.
 36291.....John Gastellicetto, Golconda, Overland.
 36292.....Pete Lacea, Golconda, Overland.
 36293.....Walter Gilmer, O'Neil, Dodge.
 36294.....Leslie Johnson, Wells, Overland.
 36295.....C. R. Moorman, Kimberly, Ford.
 36296.....Frank E. Huffer, McGill, Hupmobile.
 36297.....Fred Tisdial, Las Vegas, Buick.
 36298.....Las Vegas Gas Co., Las Vegas, Ford.
 36299.....John M. Fassler, Lovelock, Ford.
 36300.....Frank I. Eade, Battle Mountain, Over.
 36301.....Clyde E. Ganser, Battle Mountain, Ford.
 36302.....Ralph Thomas, Las Vegas, Ford.
 36303.....Ralph Thomas, Las Vegas, Hupmobile.
 36304.....John E. Robbins, Elko, Dodge.
 36305.....George Hardesty, Elko, Dodge.
 36306.....Walter R. Bracken, Las Vegas, Ford.
 36307.....Mrs. Fred Boswell, Las Vegas, Dodge.
 36308.....City of Las Vegas, Las Vegas, Federal.
 36309.....F. E. Fritzsche, Carson City, Ford.
 36310.....H. S. Williams, Carson City, Dorris.
 36311.....J. A. Yoacham, Caliente, Ford.
 36312.....Ray Loveless, Las Vegas, Ford.
 36313.....Ross Woodward, Goldfield, Ford.
 36314.....C. W. Brandon, Goldfield, Buick.
 36315.....John Barrier, Tonopah, Hupmobile.
 36316.....M. L. Brown, Tonopah, Ford.
 36317.....Chas. G. Altman, Yerington, Ford.
 36318.....Albert Wittner, Las Vegas, Ford.
 36319.....Geo. Lytle, Las Vegas, Ford.
 36320.....V. C. Freelove, Goodsprings, Ford.
 36321.....W. E. Allen, Goodsprings, Buick.
 36322.....John A. Bishop, McGill, Dodge.
 36323.....Joe Cook, Tonopah, Kissel Kar.
 36324.....Rosenbaum Bros., Inc., Ely, Studebaker.
 36325.....Frank Joseph Mark, Hamilton, Ford.
 36326.....Ely Packing Co., Ely, Kissel Kar.
 36327.....E. L. Bachman, Elko, Dodge.
 36328.....Chas. C. Drown, Lee, Dodge.
 36329.....Mrs. Aurilla Spencer, Reno, Overland.
 36330.....Harry Curran, Reno, Dodge.
 36331.....Star Taxi, Reno, Oakland.
 36332.....James Dahl, Copper Canyon, Ford.
 36333.....J. T. Barton, Deeth, Ford.
 36334.....J. T. Barton, Deeth, Ford.
 36335.....C. L. Neely, Metropolis, Buick.
 36336.....O. F. Turner, Lurline, Ford.
 36337.....Chas. C. Larson, Minden, Lexington.
 36338.....Fred H. Helwinkle, Minden, Hudson.
 36339.....Marvin Arnold, Goldfield, Ford.
 36340.....John Mink, Round Mountain, Overland.
 36341.....C. V. Averill, Tonopah, Ford.
 36342.....W. S. D. Young, Tonopah, Ford.
 36343.....E. R. Bennett, Tonopah, Reo.
 36344.....A. J. Carmack, Tonopah, Mitchell 6.
 36345.....F. V. Hatch, Goldfield, Ford.
 36346.....Vic. Bernard, Yerington, Dodge.
 36347.....Wood Curtis & Co., Reno, Ford.
 36348.....R. Bonney, Reno, Overland.
 36349.....A. W. Sewell Co., Tuscarora, F.W.D.
 36350.....Henry Frevert, Gardnerville, Dodge.
 36351.....G. J. Werner, Virginia City, Buick.
 36352.....Raymond Borda, Gardnerville, Buick.
 36353.....A. W. Sewell, Tuscarora, Dodge.
 36354.....A. W. Sewell, Tuscarora, Reo.
 36355.....Wm. Ross, Flanigan, Chevrolet.
 36356.....H. M. Parsons, Sparks, Overland.
 36357.....A. C. Helmsold, Reno, Franklin.
 36358.....J. M. Raycraft, Pahump, Pope-Hart.
 36359.....Brian O'Rourke, Carson City, Buick.
 36360.....L. W. Raley, Ludwig, Reo.
 36361.....J. J. Collins, Battle Mountain, Ford.
 36362.....Pedropetti Bros., Gardnerville, Buick.
 36363.....Harry Highfield, Carlin, Hollier 8.
 36364.....W. H. Spreeckmeyer, Carlin, Maxwell.
 36365.....L. B. Jeanny, Deeth, Dodge.
 36366.....Walter Jensen, McGill, Chevrolet.
 36367.....James Edmunds, Winnemucca, Ford.
 36368.....Sheehan & Farrell, Winnemucca, Ford.
 36369.....Carl Stofelt, Winnemucca, Reo.
 36370.....Sheehan & Farrell, Winnemucca, Buick.
 36371.....Pacific L. & S. Co., Amos, Ford.
 36372.....Pacific L. & S. Co., Amos, Ford.
 36373.....Alex. Lewis, Winnemucca, Ford.
 36374.....F. Dangelmaier, Kane Springs, Ford.
 36375.....F. M. Payne, Amos, Ford.
 36376.....John P. Freeman, Tonopah, Ford.
 36377.....Felix Bernedo, Austin, Ford.
 36378.....George A. Myles, Austin, Buick.
 36379.....Harry Speak, Wells, Chevrolet.
 36380.....E. C. Riddell, Deeth, Ford.
 36381.....C. E. Bailey, Lovelock, Ford.
 36382.....F. A. Cropley, Golconda, Ford.
 36383.....G. E. Weathers, Deeth, Overland.
 36384.....Hankins Estate, Lamolite, Paige.
 36385.....Chism Ice Cream Co., Reno, Ford.
 36386.....Elwell, Hunting & Lillis, Las Vegas, Chevrolet.
 36387.....Francis P. Temple, Las Vegas, Dodge.
 36388.....Harry M. DeVotie, Goldfield, Ford.
 36389.....Harvey Eggleston, Halleck, Ford.
 36390.....Paul Regil, Simpson, Buick.
 36391.....G. C. Johnstone, Yerington, Garford.
 36392.....Mrs. Grace Wilds, Fallon, Overland.
 36393.....E. Peterson, Reno, Oakland.
 36394.....C. Baroni, Dayton, Reo.
 36395.....Joe Plumb, Reno, Overland.
 36396.....E. C. Short, Reno, Dorris.
 36397.....Frank G. Liston, Reno, Rambler.
 36398.....J. A. Marshall, Luning, Ford.
 36399.....Formas Bros., Tonopah, Overland.
 36400.....Mrs. E. Knippenberg, Carson City, Fd.
 36401.....W. H. Diets, Goldfield, Ford.
 36402.....Hasbrook Divide M. Co., Goldfield, Ford.
 36403.....Herbert Jester, Goldfield, Ford.
 36404.....W. D. Moody, Goldfield, Chandler.
 36405.....W. J. Thomas, Reno, Buick.
 36406.....L. D. Poeter, Rhyolite, Reo.
 36407.....Con. District No. 1, Overton, Ford.
 36408.....Con. District No. 1, Overton, Ford.
 36409.....Standard Oil Co., Yerington, Ford.
 36410.....Standard Oil Co., Yerington, Ford.
 36411.....H. C. Mason, Elko, Studebaker.
 36412.....Gus. Mahas, McGill, Ford.
 36413.....Robert L. Tucker, Ely, Paige.
 36414.....J. T. Elder, Flanigan, Ford.
 36415.....John G. Thompson, McGill, Maxwell.
 36416.....Fred Altenburg, Battle Mtn., Dodge.
 36417.....A. Colburn, Ruth, Overland.
 36418.....W. A. Burhans, Sparks, Ford.
 36419.....Jesse Bryant, Gerlach, Overland.
 36420.....H. H. Williams, McGill, Studebaker.
 36421.....Ed. Berg, Lovelock, Chalmers.
 36422.....Allie Walton, Metropolis, Ford.
 36423.....Warren S. Hudson, Jarbidge, Republic.
 36424.....F. P. Dann, Reno, Howard.
 36425.....M. L. Achey, Sparks, Ford.
 36426.....W. O. Smith, Franktown, Ford.
 36427.....E. O. Williams, Smith, Cartcar.
 36428.....John Herger, Genoa, Ford.
 36429.....Clarence Ruedy, Carson City, Ford.
 36430.....Clarence Ruedy, Carson City, Reo.
 36431.....G. Hurtado, Winnemucca, Ford.
 36432.....C. R. Howard, McDermitt, Ford.
 36433.....R. C. Vandenberg, Rebel Creek, Ford.
 36434.....E. Knight, Golconda, Ford.
 36435.....Deronda Feour, Winnemucca, Ford.
 36436.....David Rose, Winnemucca, Studebaker.

- 36437...Mirandeborde Bros., Winnemucca, Reno.
 36438...A. Bohnert, Winnemucca, Warren.
 36439...W. A. Parker, Tonopah, Buick.
 36440...Peter Cazan, Ruth, Hudson.
 36441...W. G. Mason, Ruth, Paige.
 36442...Ward E. Taylor, Ely, Maxwell.
 36443...W. C. Bennett, Oreana, Dodge.
 36444...Mrs. Paul E. Dragon, Reno, Maxwell.
 36445...W. W. Blakeslee, Austin, Chevrolet.
 36446...C. H. Lewis, Deeth, Studebaker.
 36447...W. R. Pound, Manhattan, Ford.
 36448...H. J. Hall, Tonopah, Ford.
 36449...F. C. West, Reno, Ford.
 36450...Wm. S. Bennett, Ludwig, Dodge.
 36451...Edward M. Ranson, Simpson, Ford.
 36452...Wilson Bros., Arden, Dodge.
 36453...Ben Armstrong, Deeth, Overland.
 36454...Geo. W. Goodfellow, Palisade, Ford.
 36455...R. F. Raine, Palisade, Ford.
 36456...R. F. Raine, Palisade, Hudson.
 36457...G. F. Deckelman, East Ely, Acme.
 36458...John Vukasmovich, Battle Mtn., Ford.
 36459...George B. Russell, Elko, Overland.
 36460...J. F. Short, Ruby Valley, Dodge.
 36461...H. M. Zingelman, Ruby Valley, Stude.
 36462...John A. Sharp, Ruby Valley, Reo 6.
 36463...George Byers, Deeth, Ford.
 36464...W. Ed. Edwards, Las Vegas, Stude.
 36465...J. R. Turner, Sparks, Hudson.
 36466...E. E. Smith, Las Vegas, Hupmobile.
 36467...Frank Gomes, Smith, Hupmobile.
 36468...Will J. Cobb, Virginia City, Ford.
 36469...William Lindsay, Carson City, Ford.
 36470...J. M. Short, Reno, Stutz.
 36471...Edw. A. Ducker, Carson City, Mitchell.
 36472...F. E. Brockliss, Minden, Ford.
 36473...Allied Divide M. Co., Goldfield, Ford.
 36474...A. Labarthe, Goldfield, Ford.
 36475...R. W. Tilley, Yerington, Ford.
 36476...L. B. Peckham, Dayton, Ford.
 36477...Chas. A. Wann, Paradise, Ford.
 36478...Antone Ramasco, Paradise, Ford.
 36479...Jacob Bushar, Caliente, Ford.
 36480...Fred Hampe, Ely, Reo.
 36481...James Wichman, Yerington, Dodge.
 36482...Guy Smith, Lamoille, Ford.
 36483...Henry Fischer, Lamoille, Ford.
 36484...John Macart, Ely, Ford.
 36485...John Macart, Ely, Republic.
 36486...City of Fallon, Fallon, Pullman.
 36487...City of Fallon, Fallon, American-LaF.
 36488...C. J. Gomes, Fallon, Sun Motor car.
 36489...T. L. Shearer, Fallon, Dort.
 36490...R. W. Thompson, Fallon, Ford.
 36491...T. W. Swindlehurst, Battle Mtn., Ford.
 36492...Chas. R. Baldwin, Washoe, Buick.
 36493...Lloyd M. Lewis, Winnemucca, Maxwell.
 36494...Harold A. Maier, McGill, Chevrolet.
 36495...Mrs. H. C. Gunn, Reno, Buick.
 36496...Homer Forester, Reno, Studebaker.
 36497...G. A. Bullock, McGill, Ford.
 36498...F. M. Kelley, Lovelock, Reo.
 36499...M. A. Johnston, Yerington, Ford.
 36500...Mrs. W. B. Alexander, Carson, Chev.
 36501...A. L. Smith, Carson City, Ford.
 36502...W. T. Tate, Las Vegas, Buick.
 36503...Nick Rogers, Manhattan, Ford.
 36504...Ugene Cary, Nelson, Hupmobile.
 36505...Carl Stoddard, Reno, Ford.
 36506...Cyril S. Wengert, Las Vegas, Hupmo.
 36507...H. R. Loyd, Caliente, Dodge.
 36508...J. W. Marley, Reno, Overland.
 36509...J. S. McQuinn, Tonopah, Buick.
 36510...J. B. McQuinn, Tonopah, Mercer.
 36511...P. Lambert & Co., Cherry Creek, GMC.
 36512...Walter Maine, Tuscarora, Hudson 6.
 36513...W. B. Devine, Owyhee, Ford.
 36514...Mark Bleak, Lovelock, Ford.
 36515...Mills Mandarich, Ruth, Ford.
 36516...Geo. Annand, Ely, Ford.
 36517...Dan T. Nicholas, Preston, Studebaker.
 36518...Goldfield Garage, Goldfield, Buick.
 36519...Battle Mtn. M. Co., Battle Mtn., Buick.
 36520...Fred L. Irwin, Currant, Ford.
 36521...Nick Howe, Tonopah, Ford.
 36522...Gold Hill, Nev., M. Co., Tonopah, Fd.
 36523...Miss A. Hubbard, Ft. Churchill, Saxon.
 36524...William Estate Co., Fallon, Ford.
 36525...J. Crawford, Reno, Chevrolet.
 36526...Harry Monn, Goldfield, Ford.
 36527...Murray Sheep Co., Burbank, Ut. Cad.
 36528...Murray Sheep Co., Burbank, Ut. Buick.
 36529...Murray Sheep Co., Burbank, Ut. Rep.
 36530...Murray Sheep Co., Burbank, Ut. Rep.
 36531...S. B. Nicholas, Packard, Ford.
 36532...W. Prendergast, Lo. Rochester, Ford.
 36533...Mrs. Ed. Stauffer, Winnemucca, Cad.
 36534...M. A. Culver, Winnemucca, Oakland.
 36535...H. C. Pearson, Winnemucca, Ford.
 36536...John Buchanan, Winnemucca, Ford.
 36537...Cooper & Unacke, Winnemucca, Ford.
 36538...H. A. Miller, Baker, Ford.
 36539...Dan Bresnahan, Goldfield, Hupmobile.
 36540...J. E. C. Williams, Goldfield, Ford.
 36541...M. Ballenger, Death Valley, Cal. Ford.
 36542...Nick Kesti, Tonopah, Buick.
 36543...F. H. Gove, Round Mountain, Ford.
 36544...Percy Train, Manhattan, Hupmobile.
 36545...Albert Modeen, Tonopah, Dodge.
 36546...John A. Porter, Fallon, Ford.
 36547...R. Leberski, Elko, Ford.
 36548...Pete Itasca, Elko, Hudson.
 36549...J. C. Walther, Halleck, Dodge.
 36550...Roy L. Primeaux, Tuscarora, Buick.
 36551...Roy L. Primeaux, Tuscarora, Buick.
 36552...Edwin S. Giles, Las Vegas, Metz.
 36553...Richard Keyworth, Jarbidge, Pope-H.
 36554...George Arthur, Carlin, Ford.
 36555...W. D. Hill, Metropolis, Ford.
 36556...Harry Eather, Jr., Eureka, Metz.
 36557...W. F. McCollum, Reno, Buick.
 36558...Bell Tel. Co. of Nev., Reno, Ford.
 36559...Bell Tel. Co. of Nev., Reno, Ford.
 36560...Humphrey Supply Co., Reno, Ford.
 36561...Thomas Drew, Sparks, Maxwell.
 36562...Sam Greger, Sparks, Saxon.
 36563...David McCollum, Verdi, Chandler.
 36564...A. E. Luke, Fallon, Ford.
 36565...J. C. Powell, Elko, Ford.
 36566...R. L. Douglass, Fallon, Ford.
 36567...L. H. Gibbs, Afton, Ford.
 36568...J. W. Davey, Winnemucca, Dodge.
 36569...Peter Centros, Flanigan, Ford.
 36570...Alfred Lee Raiche, Reno, Ford.
 36571...H. D. Ballow, Las Vegas, Ford.
 36572...L. A. Whelan, Las Vegas, Ford.
 36573...John Bernard, Gerlach, Hupmobile.
 36574...Edward Peterson, Tonopah, Dodge.
 36575...C. S. Sprague, Goldfield, Chandler.
 36576...R. P. Rasmussen, Lunix, Overland.
 36577...Hester Mayotte, Reno, Dodge.
 36578...B. F. Harzett, Tonopah, Studebaker.
 36579...J. H. Shepard, Tonopah, Dodge.
 36580...O. E. Nordahl, Tonopah, Briscoe.
 36581...B. H. Ingalls, Tonopah, Hudson.
 36582...Dr. J. W. Davis, Hawthorne, Briscoe.
 36583...Dick Lawrence, Las Vegas, Franklin.
 36584...J. R. Lawrence, East Ely, Ford.
 36585...Minerva Tungsten Corp., Shoshone, Fd.
 36586...R. Boyer, East Ely, Oldsmobile.
 36587...Geo. F. Braskett, Ely, Nelson.
 36588...Louis Capurro, Reno, Ford.
 36589...Jas. H. Canfield, Montello, Ford.
 36590...A. A. Campbell, McGill, Saxon.
 36591...W. J. Sawe, Elko, Dodge.
 36592...Tom Harper, Fallon, Ford.
 36593...D. E. Johnson, Sparks, Mitchell.
 36594...F. J. Thacker, Imlay, Dodge.
 36595...Warren B. Earl, Reno, Dodge.
 36596...T. O. Ward, Reno, Oldsmobile.
 36597...Chas. Westlund, Lamoille, Ford.
 36598...J. E. Patton, Lamoille, Ford.
 36599...Merkey & Young, Jiggs, Dodge.
 36600...Clint Bolton, Lee, Buick.
 36601...J. F. Callahan, Ely, Dodge.
 36602...C. J. Goodall, Kimberly, Ford.
 36603...H. L. Brumbaugh, Ruth, Knox.
 36604...Peter P. Topholm, Ely, Studebaker.
 36605...W. F. Kottke, Battle Mountain, Ford.
 36606...Johnnie Jonson, Cave Creek, Ford.
 36607...Mrs. E. Englebright, Eureka, Ford.
 36608...F. W. Lynwood, Reno, Buick.
 36609...J. Gladstein, Reno, Metz.

36610.....Dr. J. A. Wallace, Ely, Premier.	36636.....P. T. McArthur, Midas, Chevrolet.
36611.....Boundy Bros., Ely, Reo.	36637.....Mrs. L. Abel, Paradise Hill, Studebaker.
36612.....H. O. Hall, Ely, Ford.	36638.....Albert Remusat, Winnemucca, Chev.
36613.....Geo. W. Cowing, Carson City, Buick.	36639.....Saturino Alcorta, Winnemucca, King.
36614.....James Summers, Minden, Studebaker.	36640.....J. T. Swindlehurst, Battle Mtn., Max.
36615.....Millside Lumber Co., Gardnerville, Klei.	36641.....W. E. Wisby, Reno, Maxwell.
36616.....J. A. Currie, Gardnerville, Ford.	36642.....W. C. Mills, Deeth, Ford.
36617.....William Morgan, Wendover, Ut., Ford.	36643.....J. S. Badt, Wells, Buick.
36618.....Fred L. Anderson, Rowland, Dodge.	36644.....Herbert Badt, Wells, Buick.
36619.....Elmer Hylton, Jiggs, Ford.	36645.....Ruth Wiseman, Wells, Ford.
36620.....Scott & Adams, Jiggs, Ford.	36646.....H. A. Agee, Wells, Cole 8.
36621.....Nevada State Journal, Reno, Ford.	36647.....U. S. Indian Service, Owyhee, Ford.
36622.....G. Klein, Las Vegas, Overland.	36648.....U. S. Indian Service, Owyhee, Ford.
36623.....R. T. Jenkins, Reno, Pierce-Arrow.	36649.....Chas. B. Kappler, Carlin, Dodge.
36624.....J. W. Bement, Sparks, Chevrolet.	36650.....Reuben Jones, Contact, Ford.
36625.....Mrs. Dorothy Nash, Reno, Chevrolet.	36651.....Guy L. Richardson, Ely, Hudson.
36626.....R. T. Anderson, Deeth, Dodge.	36652.....J. H. Dearden, Ely, Studebaker.
36627.....E. W. Anderson, Deeth, Dodge.	36653.....John Chigris, Ely, Buick.
36628.....G. Ariang, Goldfield, Buick.	36654.....F. J. Hagan, Tonopah, Dodge.
36629.....T. G. Nichol, Wabuska, Ford.	36655.....Ray Baker, Tonopah, Hudson.
36630.....Lorenzi & Jones, Las Vegas, Ford.	36656.....J. F. Arnold, Reno, Ford.
36631.....J. R. Williams, Goodsprings, Overland.	36657.....A. Delgrande, Verdi, Overland.
36632.....S. W. Darling, Bunkerville, Chevrolet.	36658.....A. Forsyth, Reno, Ford.
36633.....Floyd A. Campbell, Pioche, Franklin.	36659.....E. P. Osgood, Fallon, Ford.
36634.....W. S. Cropper, Arden, Ford.	36660.....Mrs. F. W. Randolph, Halleck, Ford.
36635.....Mrs. Mary Ayres, Winnemucca, Ford.	

LIST OF DEALERS' LICENSES REGISTERED FOR 1919

Make of vehicle is given last.

D-2002.....Union Land & Cattle Co., Reno—Liberty.	D-3500.....Eugene Schuler Co., Reno—Pilot.
D-2100.....Steinheimer Bros., Reno—Studebaker.	D-3550.....Bartoo Garage, Battle Mountain.
D-2150.....Mack Bros., Inc., Reno—Hupmobile, Hudson.	D-3600.....E. J. Maupin, Fallon—Second-hand cars, Studebaker.
D-2200.....C. L. Benadum, Reno—Ford.	D-3650.....Lincoln Highway Garage, Ely—Ford, Dodge, Reo, Franklin.
D-2250.....Dorris Garage, Reno—Cole S.	D-3700.....Palace Garage, Mina—Ford, Mitchell, Kissel Kar.
D-2300.....J. C. Robertson, Reno—Overland.	D-3750.....Oden & Dayton, Inc., Lovelock—Reo, Chalmers.
D-2350.....E. P. Stites, Winnemucca—Second-hand cars.	D-3800.....Eureka Garage & Supply Co., Eureka—Ford, Dodge, Oldsmobile.
D-2400.....Albatross Garage, Elko—White Trucks, Buick.	D-3850.....F. A. Preston, Lovelock—Overland.
D-2450.....James F. Nugent, Yerington—Ford.	D-3900.....Conklin Bros., Las Vegas—Ford.
D-2500.....Revada Sales Co., Reno—Reo.	D-3950.....J. W. Woodard, Las Vegas—Dodge.
D-2550.....Frank E. Meder, Carson City—Ford, Overland.	D-4000.....Owen Motor Sales Co., Reno—Dodge.
D-2600.....Slarra Auto Supply Co., Reno—Buick.	D-4050.....McIntosh Motor Sales Co., Reno—Oldsmobile.
D-2650.....Ely Motor Car Co., Ely—Pierce-Arrow, Maxwell, Studebaker, Chevrolet, Hudson, Republic Trucks.	D-4100.....J. L. Smith, Fallon—Hupmobile, Hudson, Overland.
D-2700.....Simcox & Lani Co., Elko—Ford, Hudson, Franklin.	D-4150.....C. B. Burkham, Hawthorne—Dodge.
D-2750.....A. W. Hesson Co., Elko—Studebaker.	D-4200.....Brunkyle Garage, Gardnerville—Overland, Oldsmobile.
D-2800.....Fallon Garage, Fallon—Oldsmobile, Chevrolet.	D-4250.....Midland Garage and Machine Works, Tonopah—Overland.
D-2850.....J. B. Wainwright, Reno—Federal, Kleiber, International.	D-4400.....Tonopah Auto Supply Co., Tonopah—Ford, Dodge.
D-2900.....Menardi-Judd Co., Reno—Buick, Oakland, Lexington.	D-4450.....The I. H. Kent Company, Fallon—Oakland, Maxwell.
D-2950.....H. J. Long, Mason—Overland.	D-4500.....Overland Garage, Lovelock—Buick, Overland.
D-3000.....Calavada Auto Co., Inc., Reno—Ford.	D-4600.....C. M. Coddington, Yerington—Reo.
D-3050.....C. E. Haviland, Winnemucca—Reo, Buick, Ford.	D-4650.....A. W. H. Helberg, Gardnerville—Dodge, Chandler, Dorris, Moon.
D-3100.....E. S. Van Leer, Elko—Dodge.	D-4700.....Smith Auto Co., Reno—Dealers.
D-3150.....C. O. D. Garage, Minden—Buick, Ford.	D-5543.....Searchlight Mercantile Co., Searchlight—Buick.
D-3200.....Battle Mountain Garage, Battle Mountain—Ford.	D-5545.....Willy Bros., Reno—Haynes.
D-3250.....Brown Parker Auto Co., Goldfield—Ford, Buick, Marmon.	D-5503.....Kelley & Rebaleati, Eureka—Second-hand cars.
D-3300.....Tobar Garage, Tobar—Ford.	D-5504.....Geo. T. Toombs, Jr., Wells—Ford.
D-3350.....E. L. Burney, Reno—Second-hand cars.	D-5506.....Wm. J. Greer, Reno—International.
D-3400.....Corecco Bros., Reno—Chalmers.	D-5910.....E. A. Smith, Winnemucca—Studebaker.
D-3450.....Harry H. Duke, Elko—Oldsmobile, Buick.	

LIST OF MOTORCYCLES REGISTERED FOR 1919

Make of vehicle is given last.

1001....Dr. E. B. Gregory, Reno, Henderson.	1035....M. F. Phillips, Carson City, Indian.
1002....A. F. Roberts, Reno, Indian.	1036....E. G. Roessler, Goldfield, DeLuxe.
1003....Truckee River G. E. Co., Reno, Indian.	1037....John McNeary, Lovelock, Indian.
1004....A. W. Swan, Reno, Reading-Stannard.	1038....H. G. Hunken, Verdi, Thor.
1005....George McManus, Reno, Smith.	1039....Morris C. Yates, Reno, Indian.
1006....R. L. Buchanan, Ely, Indian.	1040....Gus S. Lee, Yerington, Indian.
1007....B. M. Hansen, Reno, Cleveland.	1041....O. H. Swasey, Lovelock, Harley-Dav.
1008....N. J. Lucchesi, Reno, Indian.	1042....Edward Graff, Reno, Cleveland.
1009....S. Morgan Hill, Lovelock, Indian.	1043....John Giardelli, Genoa, Indian.
1010....Joe L. Pelazani, Reno, Indian.	1044....Dick Canonica, Genoa, Indian.
1011....Duane Fruman, Verdi, Indian.	1045....Lew M. Meder, Carson City, Indian.
1012....Theo. Berrum, Reno, Indian.	1046....Albert Mason, Hasen, Indian.
1013....M. R. Prescott, Reno, Indian.	1047....A. Fontana, Verdi, Excelsior.
1014....Earl Games, Reno, Indian.	1048....Feuro Mongolo, Reno, Harley-Davidson.
1015....Floyd R. Couch, Fallon, Minneapolis.	1049....Sam Lear, Reno, Indian.
1016....Pete Gennette, Elko,	1050....Geo. Ramsey, Reno, Indian.
1017....N. C. Brown, Reno, Indian.	1051....Tom Wren, Reno, Indian.
1018....E. J. Luce, McGill, Henderson.	1052....E. M. Pisani, Reno, Indian.
1019....Francis J. Hermann, Reno, Harley-D.	1053....A. B. Hall, Reno, Indian.
1020....John C. Edwards, Verdi, Indian Light T.	1054....Carman Ciofani, Reno, Excelsior.
1021....A. E. Anderson, Reno, Indian Small T.	1055....Ivar Tidestrom, Las Vegas, Cleveland.
1022....Machel Yuber, McGill, Henderson.	1056....Raymond Thomson, Carlin, Excelsior.
1023....H. J. Anderson, Reno, Shaw.	1057....Chas. H. Sheperd, Reno, Indian.
1024....Albert L. Seymour, Sparks, Indian.	1058....C. F. Martin, Carson City, Excelsior.
1025....Edward M. Purty, Reno, Harley-Dav.	1059....Tom McLaughlin, Verdi, Excelsior.
1026....Arthur H. Evans, Reno, Cleveland.	1060....H. L. Morrison, Carlin, Harley-Davidson.
1027....John G. Vols, Reno, Miami.	1061....Henry Frevert, Gardnerville, Indian.
1028....Jack Ryan, Reno, Indian.	1062....J. K. Johnson, Reno, Harley-Davidson.
1029....Lee Le Masters, Reno, Cleveland.	1063....R. H. Taylor, Reno, Indian.
1030....V. Martillacci, Sparks, Harley-Davidson.	1064....Geo. M. Campbell, Lovelock, Indian.
1031....D. Troasi, Reno, Indian.	1065....W. E. Huebner, Eureka, Indian.
1032....R. Tortorollo, Reno, Indian.	1066....Harold Berger, Lakeview, Harley-Dav.
1033....Reese E. Davis, Yerington, Indian.	1067....W. S. O'Brien, Jr., McGill, Indian.
1034....Harold Mocby, McGill, Harley-Davidson.	



STATE OF NEVADA

ANNUAL INSURANCE REPORT

Summary of the financial condition
on December 31, 1918, and business
for the year of all Insurance Com-
panies authorized to transact busi-
ness in Nevada during 1919, also

List of Licensed Insurance Agents, 1919

Compiled April 23, 1919

BY

GEO. A. COLE

State Controller and ex officio Insurance Commissioner

WM. O'LEARY, Deputy



CARSON CITY, NEVADA

STATE PRINTING OFFICE : : : JOE FARNSWORTH, SUPERINTENDENT

1919



REPORT OF INSURANCE COMMISSIONER

To HON. EMMET D. BOYLE, *Governor of Nevada*:

The following statement, showing financial condition on December 31, 1918, and business for the year, of all insurance companies authorized to transact business in Nevada during 1919, with a list of all licensed insurance agents, is respectfully submitted.

A handwritten signature in cursive script, reading "Geo. A. Cole".

State Controller and ex officio Insurance Commissioner.

FIRE INSURANCE COMPANIES

Company	Financial condition				Nevada business			
	Paid-up capital, or statutory deposit	Gross assets	Liabilities, except capital	Net surplus	Risks written	Premiums received	Losses incurred	Losses paid
Aetna, Hartford, Conn.	\$5,000,000.00	\$32,074,778.15	\$18,170,745.46	\$8,904,082.69	\$728,934.00	\$19,671.70	\$13,067.35	\$12,968.06
Agricultural, Watertown, New York	500,000.00	6,168,419.57	3,367,661.42	1,980,858.15	159,000.00	4,184.09	2,233.00	166.00
Alliance, Philadelphia, Pa.	750,000.00	3,581,946.75	1,766,001.87	1,316,944.88	37,632.00	680.40	233.07	2.00
American Central, St. Louis, Mo.	1,000,000.00	4,562,928.19	2,324,949.41	1,237,978.78	74,619.00	1,612.12	43.69	43.69
American Alliance, New York	1,000,000.00	3,021,207.90	976,688.61	1,044,519.29	31,638.00	681.54	1.54	1.54
American Equitable, New York	400,000.00	1,947,828.03	1,064,565.26	483,262.77	13,279.00	306.13		
American and Foreign Marine, New York	300,000.00	2,311,166.01	387,360.85	1,623,805.16				
Atlas, Ltd., London	200,000.00	3,967,068.97	2,728,906.80	1,028,278.77	377,551.00	7,091.63	5,403.88	5,435.88
Caledonian, Edinburgh, Scotland	200,000.00	3,000,606.95	2,120,634.00	679,971.95	106,490.00	2,656.12	2,002.16	2,002.16
California, San Francisco	400,000.00	1,879,280.46	889,348.68	589,931.88	977,000.00	25,866.80	17,641.87	15,293.17
Christiania, General Christiania, Norway	200,000.00	2,544,474.39	1,665,757.16	678,717.23	77,827.00	1,790.70	1,464.00	1,464.00
Citizens, St. Louis, Mo.	200,000.00	1,186,667.94	699,870.64	296,797.30	94,293.00	1,579.16	713.27	737.04
Cleveland National, Cleveland, Ohio	839,690.00	1,662,212.57	432,400.23	570,232.34				
Columbia, Indianapolis, Indiana	216,118.00	529,198.40	257,018.08	56,062.32	1,675.00	50.64	27.53	27.53
Columbia National, Detroit, Michigan	978,875.00	1,765,472.60	668,728.58	120,069.07	12,251.00	161.02		
Commercial Union, Ltd., London	200,000.00	12,444,647.65	9,233,620.81	3,011,026.84	666,359.00	13,849.16	12,286.31	12,780.56
Concordia, Milwaukee, Wisconsin	200,000.00	3,404,843.08	2,151,476.44	503,367.64	41,100.00	1,267.74	1,669.68	1,680.36
Connecticut, Hartford, Conn.	1,000,000.00	9,457,835.01	6,406,091.15	2,051,743.86	521,831.00	8,827.10	4,396.54	1,892.64
Continental, New York	10,000,000.00	36,468,187.39	16,286,371.89	10,172,815.50	378,223.00	7,118.71	6,972.93	7,062.93
Delaware Underwriters, New York	1,000,000.00	8,563,080.11	6,223,674.09	1,339,506.02	72,890.00	3,361.76	1,238.27	1,013.40
Detroit Fire and Marine, Detroit, Mich.	500,000.00	2,814,067.89	1,149,681.04	1,164,466.85	92,236.00	1,874.08	110.23	1,107.23
Eagle Fire Insurance, Newark, N. J.	250,000.00	811,217.31	376,061.94	185,155.47	4,977.00	205.83	118.69	127.89
Eagle Star and British Dominions, Ltd., London	300,000.00	1,506,526.30	867,760.58	318,775.47	66,578.00	1,618.49	12.44	713.36
Federal, New Jersey	1,000,000.00	5,537,434.47	3,215,470.06	1,321,964.39				
Fidelity-Phoenix, New York	2,500,000.00	12,394,214.02	8,111,695.18	6,082,653.15	175,540.00	3,486.90	440.07	1,764.98
Fire Association, Philadelphia, Pa.	1,000,000.00	14,434,582.02	8,181,927.75	3,596,654.24	691,339.00	18,473.46	8,566.36	8,854.21
Fireman's Fund, San Francisco, Cal.	1,500,000.00	17,989,822.55	12,692,714.19	4,017,108.36	2,132,824.00	19,847.31	7,503.22	8,079.66
Fire Reassurance, Paris, France	200,000.00	2,586,009.27	1,854,611.94	541,391.43	11,601.00	949.79	1,008.00	1,008.00

First Reinsurance, Hartford, Conn.	500,000.00	2,479,766.50	1,675,146.50	304,626.00	2,000.00	46.20	799.57	799.57
First Russian, Petrograd, Russia.	200,000.00	2,668,877.75	2,068,877.75	434,901.86	68,022.00	1,738.66		
Globe National, Sioux City, Iowa.	1,000,000.00	1,463,460.58	39,279.09	414,181.49	216,873.00	5,943.44	1,810.61	488.11
Globe and Rutgers, New York.	700,000.00	30,389,461.55	20,865,461.24	8,324,000.31	9,690.63	9,690.63	1,738.62	1,963.62
Great American, New York.	5,000,000.00	30,716,447.05	15,231,612.92	10,484,934.13	389,421.00	1,878.29	457.16	487.16
Great American, Rochester Department, N. Y.	5,000,000.00	30,716,447.05	15,231,612.92	10,484,934.13	389,421.00	1,878.29	457.16	487.16
Guardian, Salt Lake City, Utah.	200,000.00	547,241.66	175,818.97	171,422.60	33,941.00	1,106.02		1,943.89
Hartford, Hartford, Conn.	2,000,000.00	39,723,888.62	28,600,228.54	9,123,660.06	2,372,289.00	47,180.31	8,907.44	6,183.24
Home, New York.	6,000,000.00	50,291,005.74	29,084,902.14	15,256,708.60	1,316,005.00	25,454.94	9,688.71	14,373.56
Home Fire and Marine, San Francisco, Cal.	500,000.00	2,059,320.23	683,160.76	846,159.47	5,000.00	178.69		
Insurance Co. of North America, Philadelphia.	4,000,000.00	30,863,268.58	17,961,541.22	9,001,727.36	529,514.00	9,843.61	4,899.65	4,841.49
International Insurance, New York.	200,000.00	4,883,319.00	4,055,617.74	627,701.26	528,652.00	3,233.52		583.90
Interstate, Detroit, Michigan.	259,150.00	605,625.83	299,237.67	47,238.16	1,462.00	68.77	58.90	61.62
Iowa National, Des Moines, Iowa.	500,000.00	946,929.91	197,808.41	249,121.50	1,525.00	39.60		
Jakor, Moscow, Russia.	200,000.00	3,968,060.94	3,149,378.41	643,682.53	506,032.00	2,795.91		668.69
Law Union and Rock, Ltd., London.	338,000.00	1,420,948.40	622,228.29	460,720.11	102,214.00	2,455.35	3,318.97	2,168.97
Liverpool and London and Globe, Ltd., London.	200,000.00	17,083,965.30	12,203,190.21	4,680,736.09	841,639.00	18,328.12	11,286.98	9,894.47
London and Lancashire, Liverpool.	200,000.00	6,446,711.35	3,622,307.62	2,623,403.53	315,241.00	5,746.37	2,865.17	3,025.17
London Assurance Corporation, London.	200,000.00	6,093,135.55	3,991,000.90	1,902,134.65	758,598.00	17,684.21	10,643.21	9,863.21
London Underwriters, London.	200,000.00	6,093,135.55	3,991,000.90	1,902,134.65	65,733.00	2,314.93	2,973.72	574.92
Manchester Assurance, London.	200,000.00	3,967,065.57	2,728,806.90	1,028,278.77	43,200.00	952.29	6.53	6.53
Marquette, Chicago, Ill.	300,000.00	1,154,847.16	513,829.22	341,017.94				
Michigan Fire and Marine, Detroit, Michigan.	400,000.00	1,960,400.05	1,120,837.60	429,582.45	91,654.00	2,785.57	300.75	319.75
Michigan Millers Mutual, Lansing, Michigan.	200,000.00	2,147,662.06	1,533,873.96	613,788.11	155,345.00	8,851.91	4,411.46	4,571.97
Moscow, Moscow, Russia.	200,000.00	3,162,149.80	2,444,142.06	518,007.75	146,800.00	3,296.71	1,165.85	1,165.85
National, Copenhagen, Denmark.	400,000.00	2,791,578.70	1,682,682.87	706,886.83	59,606.00	1,197.25	373.67	247.67
National, Hartford, Conn.	2,000,000.00	21,263,292.84	14,588,050.86	4,676,241.99	1,140,600.00	324.94	324.94	706.14
Nevada, Reno, Nevada.	218,090.00	335,117.96	59,010.88	58,017.08	1,625,159.68	35,650.42	25,770.84	22,770.84
Newark, Newark, N. J.	2,000,000.00	2,744,001.90	1,683,948.54	560,063.36	197,127.00	4,999.76	3,244.49	1,819.49
New York, Newark, N. J.	1,000,000.00	2,622,129.74	1,271,163.68	320,966.06	26,569.00	3,406.37	1,250.00	1,250.00
New York Underwriters, Hartford, Conn.	2,000,000.00	39,723,888.62	28,600,228.54	9,123,660.06	442,765.00	8,570.93	3,475.96	3,475.96
New Zealand, Auckland, New Zealand.	410,000.00	1,286,716.84	486,355.71	399,360.63	294,611.00	4,688.87	2,619.13	2,619.13
Niagara, New York.	1,000,000.00	10,286,583.97	6,169,477.44	3,117,106.53	506,586.00	11,706.68	2,834.02	2,878.02
North Branch, Sunbury, Pa.	500,000.00	1,392,556.44	7,063,176.51	181,683.41	1,999.00	84.63	20.45	46.63
North British and Mercantile, London.	400,000.00	10,573,470.13	7,063,176.51	2,920,294.62	784,952.00	14,774.49	5,868.61	4,313.61

FIRE INSURANCE COMPANIES—Continued

Company	Financial condition			Nevada business				
	Paid-up capital, or statutory deposit	Gross assets	Liabilities, except capital	Net surplus	Risks written	Premiums received	Losses incurred	Losses paid
North River, New York.....	\$300,000.00	\$5,322,164.79	\$3,314,633.21	\$1,407,481.58	\$227,421.00	\$5,605.00	\$4,264.29	\$4,260.73
Norske-Lloyd, Christiania, Norway.....	200,000.00	3,104,641.48	2,636,886.22	287,743.26	23,402.00	664.26	1,580.13	1,580.13
Northern Assurance, Ltd., London.....	200,000.00	7,132,893.38	5,037,080.05	1,895,288.33	255,246.00	6,752.61	1,742.00	1,742.00
Northern, Moscow, Russia.....	200,000.00	1,424,451.44	863,670.46	240,780.96	92,236.00	1,931.82		
Northwestern Fire and Marine, Minneapolis.....	400,000.00	1,438,339.66	891,602.31	146,837.35				
Norwegian Atlas, Ltd., Christiania, Norway.....	210,000.00	503,665.82		283,568.82				
Norwegian Assurance Union, Ltd., Christiania.....	200,000.00	1,760,144.59	1,123,523.37	436,621.22	141,466.00	739.58	265.96	231.16
Norwich Union, Ltd., London.....	200,000.00	4,261,173.07	3,068,132.16	1,008,040.91	278,725.00	6,369.70	5,257.56	2,757.56
Orient, Hartford, Conn.....	1,000,000.00	4,596,114.03	2,406,415.60	1,189,696.43	128,092.00	2,518.29	10.44	10.44
Pacific National, Sacramento, Cal.....	250,000.00	392,959.16	31,816.42	111,142.74	9,250.00	147.66	8,401.67	8,401.67
Palatine, Ltd., London.....	200,000.00	3,976,134.46	2,710,278.55	1,065,855.91	183,464.00	4,237.86	1,239.41	1,239.41
Paternelle, Paris, France.....	200,000.00	1,695,336.49	1,315,623.89	179,766.60				
Patriotic, Ltd., Dublin.....	200,000.00	829,512.88	274,708.07	354,804.81	34,276.00	1,062.76	46	46
Pennsylvania, Philadelphia.....	750,000.00	8,528,072.64	5,980,244.04	1,845,828.60	508,582.00	8,534.90	6,984.76	7,740.01
Philadelphia Underwriters, Philadelphia.....	5,000,000.00	44,344,849.60	26,743,499.00	12,601,350.60	296,098.00	8,279.72	6,127.96	6,290.30
Phoenix Assurance, Ltd., London.....	200,000.00	5,359,591.17	3,830,962.75	1,828,606.42	351,827.00	5,187.78	1,936.84	1,955.84
Phoenix, Hartford, Conn.....	3,000,000.00	19,706,197.85	9,198,785.53	7,506,412.32	273,518.00	5,940.98	4,699.13	4,124.13
Provident Washington, Providence, R. I.....	1,000,000.00	7,350,771.85	4,206,583.41	2,142,186.25	78,496.00	1,834.74	2,473.36	2,473.36
Prudential Re- and Co- Ins., Ltd., Zurich, Switz.....	200,000.00	1,676,465.79	787,532.07	688,933.72	84,196.00	1,514.70		
Queen, New York.....	2,000,000.00	14,457,150.29	7,796,700.25	4,660,450.04	1,144,078.00	29,100.06	11,809.65	11,114.65
Rossia, Petrograd, Russia.....	200,000.00	11,469,405.21	8,664,517.36	2,608,887.85	581,562.00	4,640.28	1,097.71	1,113.71
Royal, Ltd., Liverpool.....	662,000.00	18,269,657.00	12,804,135.90	4,803,521.10	1,534,979.00	33,896.63	15,412.39	10,598.64
Russia Reinsurance, Petrograd, Russia.....	200,000.00	2,456,950.28	1,672,119.66	584,890.63	116,049.00	2,600.02	788.22	788.22
Salamandra, Petrograd, Russia.....	200,000.00	4,179,941.06	3,213,284.73	766,656.32	1,015,500.00	3,434.96	2,233.35	2,233.35
Scottish Union and National, Edinburgh.....	200,000.00	7,844,295.27	3,955,799.77	3,728,495.50	186,945.00	5,212.54	1,732.41	1,732.41
Second Russian, Petrograd, Russia.....	222,000.00	1,816,089.24	1,278,517.09	315,572.15	122,182.00	902.06		1,137.27
Security, New Haven, Conn.....	1,000,000.00	5,823,676.43	3,861,076.11	982,600.32	42,438.00	982.12		

Standanavia Insurance Co., Ltd., Copenhagen.	400,000.00	4,492,820.88	8,654,182.95	438,887.98	70,405.00	1,128.71	350.09	355.09
Standia, Stockholm, Sweden	330,000.00	2,185,848.83	1,387,931.25	468,042.08	201,169.00	4,878.74	1,170.46	1,190.46
South Carolina, Columbia, S. C.	200,000.00	1,429,588.91	988,587.62	131,014.59				
Springfield Fire and Marine, Springfield, Mass.	2,500,000.00	14,742,701.92	9,164,841.54	3,078,964.38	478,047.06	12,769.16	13,315.67	10,299.84
Star, New York	400,000.00	2,077,588.13	684,374.04	511,194.08	57,082.00	1,274.45	1,707.64	1,707.64
Steering, Indianapolis, Ind.	350,000.00	2,077,549.88	697,371.22	474,639.64	35,600.00	966.38		
St. Paul Fire and Marine, St. Paul, Minn.	1,000,000.00	14,026,943.83	8,722,407.88	4,394,635.95	366,194.00	5,425.38	1,346.89	1,346.89
Sun Insurance Office, London	200,000.00	5,962,307.68	4,498,433.69	1,681,873.89	433,747.00	10,423.66	499.58	499.58
Svea, Gothenburg, Sweden	200,000.00	2,501,403.62	1,480,310.29	821,083.33	155,649.00	6,210.41	3,195.00	2,307.80
Swiss Reinsurance, Zurich, Switzerland	200,000.00	2,462,773.08	1,769,965.11	472,817.97	157,406.00	3,312.10	1,409.04	1,406.04
Union Assurance Society, Ltd., London	200,000.00	2,257,133.52	1,145,208.75	911,924.77	130,060.00	2,897.53	2,556.17	2,556.17
Union Hispano-Americana, Seville, S. A.	200,000.00	2,776,805.15	1,174,766.06	402,089.09				
Union and Phenix Espanol, Madrid, Spain	200,000.00	2,797,814.76	2,287,900.32	309,914.44	286,181.00	6,385.21	2,846.06	2,881.06
United States, New York	1,400,000.00	8,636,680.87	5,211,524.66	2,025,135.01	55,639.00	939.90	10,527.88	10,527.88
Urbaine, Paris, France	300,000.00	3,890,188.75	2,884,917.25	705,271.50	125,106.00	2,486.73	30.98	40.98
Union Insurance Society, Canton, China	200,000.00	786,235.72	378,375.74	207,859.96				
Vulcan, Oakland, Cal.	500,000.00	1,359,233.47	477,716.75	381,516.72	374,026.00	4,482.49	2,820.71	2,828.63
Warsaw, Warsaw, Russia	200,000.00	1,096,872.25	686,739.46	200,132.29	72,976.00	1,611.61	1,744.52	1,744.52
Westchester, New York	1,000,000.00	8,563,080.11	6,223,574.09	1,339,506.02	627,617.00	6,739.21	3,806.86	6,718.53
Western Assurance, Toronto, Canada	400,000.00	4,693,680.53	2,959,964.20	1,333,616.33	279,854.00	4,272.52	963.98	677.59
Totals	\$99,081,613.00	\$857,349,835.18	\$526,846,446.63	\$231,421,775.55	\$32,616,030.73	\$617,876.11	\$325,455.76	\$305,508.06

LIFE INSURANCE COMPANIES

Company	Financial condition				Nevada business				
	Paid-up capital, or statutory deposit	Gross assets	Liabilities except capital	Net surplus	Risks written	Premiums received	Losses incurred	Losses paid	Insurance in force
Bankers Reserve, Omaha, Nebraska.	\$100,000.00	\$8,205,029.30	\$6,867,068.64	\$1,237,960.66	\$175.50	\$523.93			\$14,794.50
Beneficial, Salt Lake City, Utah	200,000.00	2,520,549.30	2,225,983.99	94,515.31	6,500.00	5,566.42	\$1,000.00	\$1,000.00	194,665.00
California State, Sacramento, Cal.	500,000.00	2,924,006.98	2,295,360.93	138,646.05	106,945.00	23,294.09	12,000.00	2,000.00	632,396.00
Capitol, Denver, Colorado	100,000.00	2,994,743.72	2,764,683.04	130,060.68	12,000.00				43,738.00
Columbian National, Boston, Mass.	1,000,000.00	15,194,862.32	13,962,362.13	232,470.19	105,029.00	11,414.27	12,330.00		340,029.00
Continental, Salt Lake City, Utah	208,875.00	2,379,661.01	2,140,708.53	30,107.48	130,600.00	20,606.85	6,808.57	3,303.57	484,800.00
Equitable Life Assurance Scty., N. Y.	100,000.00	611,813,919.83	598,787,107.25	12,926,812.58	176,500.00	42,402.62	32,604.00	32,604.00	1,569,274.00
Home, New York		36,097,016.81	35,173,395.74	923,621.07	12,574.96	3,774.12	5,569.96	5,569.96	77,386.00
Idaho State, Boise City, Idaho	200,000.00	1,028,182.37	821,871.70	6,310.67	23,540.00	1,109.14			48,040.00
Kansas City, Kansas City, Mo.	200,000.00	10,922,099.20	10,582,866.54	129,232.65	269,418.00	31,826.49	14,500.00	2,000.00	947,851.00
Missouri State, St. Louis, Mo.	1,000,000.00	19,895,653.58	17,909,777.77	1,085,875.81	46,580.00	7,279.58			182,484.00
Mutual Life, New York		673,714,238.83	673,714,238.83		452,029.00	110,337.64	67,659.00	66,901.00	3,080,463.00
Mutual Benefit, Newark, N. J.		249,046,917.73	249,046,917.73		11,677.00	4,248.26	150.00	150.00	188,766.00
National, Chicago, Ill.	500,000.00	16,635,967.31	15,971,640.43	164,316.88	4,000.00	965.38	4,000.00	4,000.00	15,000.00
Nevada State, Reno, Nevada	154,085.00	265,618.23	85,960.15	25,573.08	199,000.00	11,294.73			340,500.00
New York, New York		995,067,284.86	995,067,284.86		584,231.00	241,427.38	147,523.51	125,615.51	7,691,399.00
Northwestern Mutual, Milwaukee		414,837,471.74	395,338,694.91	19,498,776.83	111,000.00	30,310.31	51,699.00	21,486.00	1,360,480.00
Occidental, Los Angeles, Cal.	250,000.00	2,112,996.92	1,886,238.21	26,708.71	20,000.00	7,827.16	5,500.00	5,500.00	300,430.00
Pacific Mutual, Los Angeles, Cal.	1,000,000.00	45,432,695.61	43,606,943.90	825,751.71	26,738.00	14,943.88	7,000.00	2,000.00	545,346.00
Penn Mutual, Philadelphia, Pa.		202,962,994.87	202,962,994.87		9,500.00	208.34	15,500.00	14,500.00	729,569.00
Reliance, Pittsburg, Pa.	1,000,000.00	8,790,974.65	7,588,007.88	202,966.77	1,000.00	1,902.06	1,967.80	1,967.80	51,574.00

Travelers, Hartford, Conn.	6,000,000.00	148,568,440.19	133,948,881.86	8,619,548.33	3,466.95			67,946.00
Union Mutual, Portland, Me.		18,579,390.33	18,410,190.06	198,200.28	21,089.42	3,000.00	1,500.00	200,235.24
West Coast San Francisco, S. F., Cal.	250,000.00	4,131,517.89	8,833,886.98	47,680.91	3,547.52	1,000.00	1,000.00	106,239.00
Western States, San Francisco, Cal.	1,000,000.00	8,546,794.80	2,426,065.39	120,729.41	3,795.69			88,000.00
Totals	\$13,762,960.00	\$3,497,689,063.38	\$3,437,189,237.31	\$46,636,866.07	\$2,867,976.88	\$368,791.84	\$291,076.84	\$19,305,886.74

FIDELITY AND CASUALTY INSURANCE COMPANIES

Company	Financial condition			Nevada business					
	Paid-up capital	Gross assets	Liabilities, except capital	Net surplus	Nature	Premiums received	Total premiums	Losses paid	Total losses
Aetna Casualty and Surety, Hartford, Conn.	\$2,000,000.00	\$12,482,151.51	\$7,241,444.44	\$3,240,707.07	Liability Fidelity Surety Plate glass Burglary, theft Sprinkler Auto and teams	\$22.57 72.12 92.46 93.77 150.24 139.00 44.16			
American Indemnity Galveston, Texas	500,000.00	1,606,635.40	612,500.80	494,134.60	Fidelity Surety	13.75 164.06	182.81		
American Surety, New York	5,000,000.00	11,366,226.19	5,186,540.32	1,179,685.87	Burglary, theft Surety Fidelity	244.11 3,890.25 1,713.00	5,837.36		
Columbian National Life, Boston, Mass.	1,000,000.00	15,194,862.32	13,962,392.13	232,470.19	Accident Health	187.60 164.50	362.10		
Continental Casualty, Hammond, Ind.	600,000.00	3,966,826.14	3,066,826.14	300,000.00	Accident Health	20,716.74 6,644.81	27,361.55	\$12,693.82 2,366.10	\$15,059.92
Employers' Liability, London	200,000.00	21,181,851.02	18,569,737.59	2,392,113.43	Accident Health Liability Auto and teams Burglary, theft	293.00 70.00 608.12 65.86	1,026.98	575.71	575.71
Fidelity and Deposit, Baltimore, Md.	3,000,000.00	10,780,945.43	6,068,927.83	1,722,017.60	Accident Health Liability Fidelity	149.87 25.48		41.07 100.00 .15	
						496.06			

FIDELITY AND CASUALTY INSURANCE COMPANIES—Continued

Company	Financial condition			Nature	Nevada business			
	Paid-up capital	Gross assets	Liabilities, except capital		Premiums received	Total premiums	Losses paid	Total losses
North American Accident, Chicago ..	\$200,000.00	\$896,295.90	\$828,753.11	Accident	\$4,688.01	\$4,688.01	\$1,781.14	\$1,781.14
Occidental Life, Los Angeles	250,000.00	2,112,996.92	1,896,288.21	Accident Health	668.89 837.47	1,006.16	31.06	31.06
Pacific Mutual, Los Angeles	1,000,000.00	2,458,061.61	1,383,061.61	Accident Health	5,940.70 1,624.06	7,564.76	965.80 457.64	1,423.24
Standard Accident, Detroit, Mich.	1,000,000.00	9,284,813.13	6,824,912.46	Accident Health				
Travelers, Hartford, Conn.	6,000,000.00	39,791,196.37	28,982,646.06	Accident Health	329.45 8.76	338.20	50.00	50.00
United States Casualty Co., 80 Maiden Lane, New York	500,000.00	4,894,088.72	3,719,093.72	Accident Liability Health	39.68 449.06 16.60			
				Burglary, theft, Auto and teams	36.00 5.22	546.45		
United States Fidelity and Guaranty, Baltimore, Maryland	3,000,000.00	18,554,713.94	13,407,452.51	Accident Liability Fidelity	50.00 672.31 4,272.95		100.00	
				Surety, Plate glass	6,364.11 69.28		619.51	
				Burglary, theft, Auto and teams	1,007.49 2.68			
				Health	36.00	11,489.68		719.51
Totals	\$35,500,000.00	\$210,696,016.40	\$146,266,344.11		\$96,926.41	\$96,926.41	\$31,408.78	\$31,408.78

SUMMARY OF NEVADA'S FIDELITY AND CASUALTY BUSINESS FOR 1918

	Premiums	Losses
Accident.....	\$50,154.55	\$22,167.70
Health.....	8,927.17	2,964.79
Fidelity.....	11,401.80	1,590.30
Surety.....	13,422.71	619.51
Liability.....	2,168.08	100.16
Burglary and theft.....	1,646.25	98.52
Workmen's compensation.....	139.00	72.37
Sprinkler.....	153.04	40.90
Autos and teams.....	3,310.86	702.54
Plate glass.....	696.74	---
Steam boiler.....	4,888.21	---
Live stock.....	---	3,180.00
Totals.....	\$96,993.41	\$31,408.78

AGENTS OF FIRE INSURANCE COMPANIES

Etna Insurance Company:

Jas. M. Leonard, Attorney in Fact, Virginia City

Bank of Nevada Savings & Trust Company	Reno
Bank of Wells	Wells
Churchill County Bank	Fallon
Condon, John F.	Verdi
Cook, John S., & Company	Goldfield
Douglas County Farmers Bank	Gardnerville
Farmers Bank of Carson Valley	Minden
Leonard, James M.	Carson City
Leonard, James M.	Virginia City
Lovelock Mercantile Banking Company	Lovelock
Mayer, H. H.	Elko
Poole, J. D.	Sparks
Sheehan, J.	Winnemucca
Southern Nevada Abstract Company	Tonopah
Weymouth, W. A.	Beowawe
Whitacre, E. H.	Yerington
Winnemucca State Bank & Trust Company	Winnemucca
Witcher, A. B.	Ely

Agricultural Insurance Company:

John Lothrop, Attorney in Fact, Dayton

Condon, J. F.	Verdi
Davidson, Mrs. Josie L.	Yerington
Ely Investment Company	Ely
Goodin & Twigg	Lovelock
Hesson, R. W.	Elko
Jones, T. A.	Fallon
Littell, F. L.	Yerington
Lothrop, John	Dayton
Moore, S. R., & Company	Tonopah
Peters, C. H.	Carson City
Poole, J. D.	Sparks
Washoe County Bank	Reno

Alliance Insurance Company:

Frank J. Peck, Attorney in Fact, Reno

Peck & Sample Co.	Reno
Way, C. M.	Fallon

American Alliance Insurance Company:

Walter S. Fifield, Attorney in Fact, Reno

Ely Investment Company	Ely
Henderson, John	Elko
Peters, Charles H.	Carson City
Sessions & Clement	Reno

American Central Insurance Company:

Barlow, A. H.	Mason
Burton, C. F.	Reno
Lockhart, J. M.	Ely
Read, John T.	Reno
Whelan, John L.	San Francisco, Cal.
Winnemucca State Bank & Trust Company	Winnemucca

American Equitable Assurance Company:

Frank J. Byington, Attorney in Fact, Reno

Byington, F. J.	Reno
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American and Foreign Marine Insurance Company:

Alice McAndrews, Attorney in Fact, Reno

McAndrews, Alice	Reno
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Atlas Assurance Company, Ltd.:

Jas. M. Leonard, Attorney in Fact, Virginia City

Dangberg, H. F.	Minden
Ely Investment Company	Ely
Farmers Bank of Carson Valley	Minden
Henderson, John	Elko
Jones, T. A.	Fallon
Leonard, James M.	Virginia City
Reading, A. G.	Wellington

Sessions & Clement	Reno
Sheehan, J.	Winnemucca
Skillman, E. A.	Eureka
Southern Nevada Abstract Company	Tonopah

Caledonian Insurance Company:

A. C. Helmold, Attorney in Fact, Reno

Bank of Nevada Savings & Trust Company	Reno
Condon, J. F.	Verdi
Ely Investment Company	Ely
Farmers Bank of Carson Valley	Minden
Grob, Fred	Fallon
Henderson, John	Elko
Moore, S. R. & Company	Tonopah
Sheehan, J.	Winnemucca

California Insurance Company:

Washoe County Bank, Attorney in Fact, Reno

Bank of Sparks	Sparks
Beckstead, L. A.	St. Clair
Buol, Peter	Las Vegas
Douglas County Farmers Bank	Gardnerville
Farmers Bank of Carson Valley	Minden
First National Bank	Elko
Glass, F. E.	Reno
Jones, T. A.	Fallon
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Lovelock Mercantile Banking Company	Lovelock
Southern Nevada Abstract Company	Tonopah
Standing, Geo. B.	Metropolis
Stephoe Agency Company	Ely
Washoe County Bank	Reno

Christiania General Insurance Company:Insurance Commissioner of Nevada, Attorney in Fact,
Carson City**Citizens Insurance Company:**

F. G. Clement, Attorney in Fact, Reno

Brown, C. B.	Winnemucca
Jones, T. A.	Fallon
Sessions & Clement	Reno
Southern Nevada Abstract Company	Tonopah

Cleveland National Fire Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Columbian Insurance Company:

(Geo. A. Cole, Attorney in Fact, Carson City

Columbian National Fire Insurance Company:Insurance Commissioner of Nevada, Attorney in Fact,
Carson City**Commercial Union Assurance Company:**

A. C. Helmold, Attorney in Fact, Reno

Bank of Nevada Savings & Trust Company	Reno
Bank of Sparks	Sparks
Gomes, G. A.	Golconda
Leonard, Jas. M.	Virginia City
Nevada First National Bank	Tonopah
Poole, J. D.	Sparks
Russell, Geo., Company	Elko
Sheehan, J.	Winnemucca
Southern Nevada Abstract Company	Tonopah
Way, C. M.	Fallon

Concordia Fire Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Ely Investment Company	Ely
Mayer, Leon S.	Reno
Quilici, D., Bros.	Wells
Raycraft, A. G.	Tonopah
Read, John T.	Reno
Sheehan, J.	Winnemucca
Taber, A. D.	Elko
Way, C. M.	Fallon

Connecticut Fire Insurance Company:

C. R. Carter, Attorney in Fact, Reno

Allen, Jas. G.	Winnemucca
Beard, F. L.	Goldfield
Condon, J. F.	Verdi
Fairchild, M. D.	Carson City
Farmers Bank of Carson Valley	Minden
First National Bank	Elko
Jones, Thos. A.	Fallon
Leonard, F. E.	Beowawe
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Lovelock Mercantile Company	Lovelock
Mahoney, H. R.	Deeth
Nevada First National Bank	Tonopah
Poole, J. D.	Sparks
Steptoe Agency Company	Ely
Washoe County Bank	Reno
Whitacre, E. H., Land & Title Company	Yerington
Winnemucca State Bank & Trust Company	Winnemucca
Woodard, H. J.	Las Vegas

Continental Insurance Company:

J. Eggers, Attorney in Fact, Reno

Byington & Hall	Reno
Cooper, E. J.	Yerington
Harley, R. L.	Lovelock
Henderson, John	Elko
Hillman, H. R.	Sparks
Jepson, O. A.	Sparks
Krenkel, F. C.	Winnemucca
Moore, S. R., & Co.	Tonopah
Way, C. M.	Fallon

Delaware Underwriters:

J. C. Tranter, Attorney in Fact, Reno

Cooper, E. J.	Yerington
Ely Investment Company	Ely
Leonard, Jas. M.	Carson City
Mayer, Leon S.	Reno
Moore, S. R., & Co.	Tonopah
Peck & Sample Company	Reno
Quilici Bros., D.	Wells
Way, C. M.	Fallon

Detroit Fire & Marine Insurance Company:

F. J. Byington, Attorney in Fact, Reno

Jones, T. A.	Fallon
Mulcahy, P. H.	Sparks
Quigley, P. A.	Lovelock
Read, John T.	Reno
Southern Nevada Abstract Company	Tonopah
Steptoe Agency Company	Ely
Winnemucca State Bank & Trust Company	Winnemucca

Eagle Fire Insurance Company:

C. H. Peters, Attorney in Fact, Carson City

Peters, C. H.	Carson City
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Eagle, Star and British Dominions Insurance Company, Ltd.:

Geo. A. Cole, Attorney in Fact, Carson City

Henderson, John	Elko
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Federal Insurance Company:

A. Helmold, Attorney in Fact, Carson City

Fidelity Phenix Fire Insurance Company:

F. L. Wildes, Attorney in Fact, Carson City

Bacon, H. H.	Tonopah
Hillman, H. P.	Reno
Jepson, O. A.	Reno

Fire Association of Philadelphia:

C. H. Peters, Attorney in Fact, Carson City

Beemer, Chas. A.	Sparks
Buol, Peter	Las Vegas
Cave, Albert R.	Mestallo

Condon, J. F.	Verdi
Cook, John S., & Co., Bank	Goldfield
Cooper, E. J.	Yerington
Douglas County Farmers Bank	Gardnerville
Ely Securities Company	East Ely
First National Bank	Winnemucca
Franks, G. W.	Pioche
Goodin & Twigg	Lovelock
Hoyt Mercantile Company	Lamoille
Jones, Thos. A.	Fallon
Lee, M. L.	Baker
Leonard, Jas. M.	Virginia City
Moore, S. R., & Company	Tonopah
Peck & Sample Company	Reno
Peters, C. H.	Carson City
Poole, J. D.	Sparks
Raycraft, A. G.	Tonopah
Riley, M. M.	Goodsprings
Russell, Geo.	Elko
Steele, Geo. A.	Fernley
Steptoe Agency Company	Ely

Firemans Fund Insurance Company:

J. C. Tranter, Attorney in Fact, Reno

Adams, W. G.	Battle Mountain
Bank of Sparks	Sparks
Bank of Wells	Wells
Condon, J. F.	Verdi
Cook, John S., & Company	Goldfield
Cooper, E. J.	Yerington
Davidson, Mrs. Josie L.	Yerington
Douglas County Farmers Bank	Gardnerville
Erickson, C. F.	Lovelock
Jones, T. A.	Fallon
Lander County Bank	Anstin
Lee, M. L., & Company	Pioche
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Mulcahy, H. C.	Sparks
Peck & Sample Company	Reno
Reading, A. G.	Wellington
Reynolds, John P.	Sparks
Riley, M. M.	Las Vegas
Russell, Geo., Company	Elko
Sheehan, J.	Winnemucca
Skillman, E. A.	Eureka
Southern Nevada Abstract Company	Tonopah
Steptoe Agency Company	Ely
Washoe County Bank	Reno

Fire Reassurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

First Reinsurance Company of Hartford:

State Controller of Nevada, Attorney in Fact, Carson City

First Russian Insurance Company:

T. R. Hofer, Attorney in Fact, Reno

Globe National Fire Insurance Company:Geo. A. Cole, Insurance Commissioner, Attorney in Fact,
Carson City**Globe & Rutgers Fire Insurance Company:**

A. B. Vogel, Attorney in Fact, Reno

Baker, F. C.	Lovelock
Bank of Nevada Savings & Trust Company	Reno
Cook, John S., & Company	Goldfield
Davidson, Josie L.	Yerington
Fairchild, M. D. (auto insurance)	Reno
First National Bank of Elko	Elko
Fitzgerald, John B.	Elko
Harris Bros., Inc.	Gardnerville
Littell, F. L.	Yerington
Moore, S. R., & Company (auto insurance)	Tonopah
Southern Nevada Abstract Company	Tonopah
Steptoe Agency Company	Ely

Great American Insurance Company:

Washoe County Bank, Attorney in Fact, Reno

Douglas County Farmers Bank	Gardnerville
First National Bank of Elko	Elko
Grob, Fred	Fallon
Kroner, J. W.	Lovelock
Lee, M. L., & Company	Pioche
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Lockhart, J. M.	Ely
Poole, J. D.	Sparks
Puett, J. W.	Carlin
Washoe County Bank	Reno
Winnemucca State Bank & Trust Company	Winnemucca

Guardian Fire Insurance Company:Insurance Commissioner of Nevada, Attorney in Fact.
Carson City

Cave, A. R.	Montello
Jensen, John F.	Wendover

Hartford Fire Insurance Company:

A. C. Helmold, Attorney in Fact, Reno

Alquist, C. L.	Caliente
Bank of Nevada Savings & Trust Company	Reno
Bible, J. H.	Lovelock
Breeze, C. D.	Las Vegas
Burton, C. F. (livestock insurance)	Reno
Churchill County Bank	Fallon
Condon, J. F.	Verdi
Cooper, E. J.	Yerington
Douglas County Farmers Bank	Gardnerville
Griswold, E.	Wadsworth
Harden, Dr. F. A. (livestock insurance)	Fallon
Henderson, John	Elko
Hesson, A. W., & Company	Elko
Kemler, Frank	Paradise Valley
Lee, M. L., & Company	Pioche
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Lovelock Mercantile Company	Lovelock
Poole, J. D.	Sparks
Reinhart, E., & Company	Golconda
Sessions & Clement	Reno
Southern Nevada Abstract Company	Tonopah
Winnemucca State Bank & Trust Company	Winnemucca
Woodard, H. J.	Las Vegas

Home Fire and Marine Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Home Insurance Company:

C. H. Peters, Attorney in Fact, Carson City

Allen, George	Wells
Bank of Sparks	Sparks
Bank of Wells	Wells
Cave, Albert R.	Montello
Condon, John F.	Verdi
Cook, John S., & Company	Goldfield
Davidson, Josie L.	Yerington
Deeth Mercantile Company, Inc.	Deeth
Fairchild, Mahlon D.	Reno
George, Edward T., Jr.	Battle Mountain
Godin & Twigg	Lovelock
Grob, Fred	Fallon
Haughner, Oley O.	Gardnerville
Henderson, J.	Elko
Hesson, Robt. W.	Elko
Howard Bros.	Gardnerville
Jones, Thos. A.	Fallon
Kamm, Eric O.	Thompson
Keith, Geo. W.	Carson City
Lillis, Henry M.	Las Vegas
Mahn, C. L. Aug.	Searchlight
Marsh, H. Grant	Minden
Mason Valley Insurance Agency	Mason
Nevada First National Bank of Tonopah	Tonopah
Peck & Sample Company	Reno
Peters, Chas. H.	Carson City
Puett, John W.	Carlin
Sessions & Clement	Reno
Southern Nevada Abstract Company	Tonopah

Steptoe Agency Company	Ely
Summerfield, Sol M.	Mina
Walker, Frank E.	Verdi
Washoe County Bank	Reno
West Hardware Company	Yerington
Winnemucca State Bank & Trust Company	Winnemucca

Insurance Company of North America:

F. M. Lee, Attorney in Fact, Reno

Bank of Nevada Savings & Trust Company	Reno
Christensen, Arthur	Sparks
Churchill County Bank	Fallon
Cook, John S., & Company	Goldfield
Dubois, A. J.	Elko
Leonard, Jas. M.	Virginia City
Mason Valley Insurance Agency	Mason
Moore, S. R., & Company	Tonopah
Winnemucca State Bank & Trust Company	Winnemucca

International Insurance Company:

F. J. Byington, Attorney in Fact, Reno

Interstate Fire Insurance Company:

C. H. Peters, Attorney in Fact, Carson City

Iowa National Fire Insurance Company:

C. H. Peters, Attorney in Fact, Carson City

Peters, C. H.	Carson City
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Jakor Insurance Company:

F. J. Byington, Attorney in Fact, Reno

Law Union & Rock Insurance Company, Ltd.:

State Controller of Nevada, Attorney in Fact, Carson City

Byington & Hall	Reno
Cook, John S., & Company	Goldfield
Cooper, E. J.	Yerington
Ely Investment Company	Ely
Hesson, R. W.	Elko
Highland, R. J.	Millers
Highland, R. J.	Tonopah
Krenkel, F. C.	Winnemucca
Langwith, Miss E.	Winnemucca
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Skillman, E. A.	Eureka
Walker, F. E.	Verd

Liverpool & London & Globe Insurance Company, Ltd.:

State Controller of Nevada, Attorney in Fact, Carson City

Adams, J. E.	Hawthorne
Bank of Nevada Savings & Trust Company	Reno
Bank of Sparks	Sparks
Bank of Wells	Wells
Churchill County Bank	Fallon
Condon, J. F.	Verdi
Cook, John S., & Company	Goldfield
Davidson, Mrs. Josie L.	Yerington
Douglas County Farmers Bank	Gardnerville
Lander County Bank	Austin
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Littell, F. L.	Yerington
Mason Valley Insurance Agency	Mason
Sheehan, J.	Winnemucca
Southern Nevada Abstract Company	Tonopah
St. Clair, A. L.	Carson City
Steptoe Agency Company	Ely
Taber, A. D.	Elko
Vardy, Geo. R.	Elko

London Assurance Corporation:

C. H. Peters, Attorney in Fact, Carson City

Bank of Sparks	Sparks
Davidson, Mrs. Josie L.	Yerington
Douglas County Farmers Bank	Gardnerville
Ely Investment Company	Ely
Ely Securities Company	East Ely

Horton, J. B.	Battle Mountain
Kent, I. H. & Company	Fallon
Lovelock Mercantile Company	Lovelock
Mason Valley Insurance Agency	Mason
Mulcahy, P. H.	Sparks
Peters, C. H.	Carson City
Schiuchetti, Lena C.	Austin
Smith, Chas. D.	Thompson
Southern Nevada Abstract Company	Tonopah
Sproule, H. C.	Elko
Washoe County Bank	Reno
Winnemucca State Bank & Trust Company	Winnemucca
Woodard, H. J.	Las Vegas

London and Lancashire Fire Insurance Company:

C. H. Peters, Attorney in Fact, Carson City

Condon, J. F.	Verdi
Davidson, Josie L.	Yerington
Douglas County Farmers Bank	Gardnerville
Farmers Bank of Carson Valley	Minden
Henderson, John	Elko
Jones, T. A.	Fallon
Littell, F. L.	Yerington
Peck & Sample Company	Reno
Peters, C. H.	Carson City
Sheehan, J.	Winnemucca
Southern Nevada Abstract Company	Tonopah
Steptoe Agency Company	Ely

London Underwriters Agency:

F. P. Strassburg, Attorney in Fact, Fallon

Cave, A. R.	Montello
Churchill County Bank	Fallon
First National Bank of Elko	Elko
Leonard, Jas. M.	Carson City
Poole, J. D.	Sparks

Manchester Assurance Company:

Jas. M. Leonard, Attorney in Fact, Virginia City

Black & Company	Reno
Condon, J. F.	Verdi
Henson, A. W., & Company	Elko
Southern Nevada Abstract Company	Tonopah

Marquette National Fire Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Michigan Fire and Marine Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Bank of Nevada Savings & Trust Company	Reno
Cook, John S., & Company	Goldfield
Henderson, John	Elko
Lockhart, J. M.	Ely
Moore, S. R., & Company	Tonopah
Peters, C. H.	Carson City

Michigan Millers Mutual Fire Insurance Company:

Robert Carlson, Attorney in Fact, Reno

Carlson, Robt.	Reno
McCall, David	Fallon

Moscow Fire Insurance Company:

T. R. Hofer, Attorney in Fact, Reno

National Fire Insurance Company:

George S. Hall, Attorney in Fact, Reno

Byington & Hall	Reno
First National Bank of Elko	Elko
Grob, Fred	Fallon
Henderson, John	Elko
Lander County Bank	Austin
Leonard, Jas. M.	Carson City
Southern Nevada Abstract Company	Tonopah
Steptoe Agency Company	Ely

National Insurance Company of Denmark:

State Controller of Nevada, Attorney in Fact, Carson City

Nevada Fire Insurance Company:

Adams & Miller	Hawthorne
Adams, W. G.	Battle Mountain
Austin, W. H.	Fernley
Bank of Nevada Savings & Trust Company	Reno
Bank of Sparks	Sparks
Bank of Wells	Wells
Barlow, A. H.	Mason
Bowman, W. C.	Bunkerville
Buckingham, F. M.	Paradise Valley
Buol, Peter	Las Vegas
Case, Irwin	Paradise Valley
Christensen, Jesse	Fernley
Davidson, Mrs. Josie L.	Yerington
Davis, Jas. T.	Carson City
Davison, T. C.	Lovelock
Douglas County Farmers Bank	Gardnerville
Eckley, G. L.	Mina
Farmers Bank of Carson Valley	Minden
Glass & Lewis	Smiths
Goodin & Twigg	Lovelock
Grob, Fred	Fallon
Hendel, Chas. A.	Simpson
Henderson, John	Elko
Holland, Jas. F.	Lee
Johnson, Wes., Company	Montello
Jones, T. A.	Fallon
Joyce, Mrs. L. D.	Imlay
Leach, B. F.	Cherry Creek
Lemalre, A. D., & Sons	Battle Mountain
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Lothrop, John	Dayton
Lovelock Mercantile Banking Company	Lovelock
Luning Mercantile Company	Luning
Peters, C. H.	Carson City
Poole, J. D.	Sparks
Puett, J. W.	Carlin
Sessions & Clement	Reno
Sheehan, J.	Winnemucca
Skillman, E. A.	Eureka
Southern Nevada Abstract Company	Tonopah
Springer, F. H.	Goodsprings
Standing, Geo. B.	Metropolis
Stephoe Agency Company	Ely
Summerfield, S. M.	Mina
Wallace, J. D.	Ely
Washoe County Bank	Reno
Way, C. M.	Fallon
Whitehead, S. R.	Overton
Winnemucca State Bank & Trust Company	Winnemucca

Newark Fire Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Beard, Frank L.	Goldfield
Fairchild, M. D.	Reno
Hancock, Wm. C.	Battle Mountain
Mason Valley Insurance Agency	Mason
McKnight, Ira J.	Ely
McKnight, Wm.	Carson City
Nevada First National Bank of Tonopah	Tonopah
Riley, M. M.	Las Vegas
Way, C. M.	Fallon

New Jersey Fire Insurance Company:

State Agent & Transfer Syndicate, Attorney in Fact, Carson City

Black, F. D., & Company	Reno
Flagg, M. J.	Reno
French & Matthews	Elko
Kaufman, J. G.	Yerington
Puett, J. W.	Carlin
Taw, St. J. L.	Lovelock

New York Underwriters' Agency:

F. L. Wildes, Attorney in Fact, Carson City

Cook, John S., & Company	Goldfield
Ely Investment Company	Ely
Henderson, John	Elko
Jones, T. A.	Fallon
Lockhart, J. M.	Ely
Scheeline Banking & Trust Company	Reno
Sheehan, J.	Winnemucca

Skillman, E. A.	Eureka
Southern Nevada Abstract Company	Tonopah
Woodard, H. J.	Las Vegas

New Zealand Insurance Company, Ltd.:

Insurance Commissioner of Nevada, Attorney in Fact.
Carson City

Farmers Bank of Carson Valley	Minden
Leonard, Jas. M.	Carson City
Scheeline Banking & Trust Company	Reno
Sheehan, J.	Winnemucca
Southern Nevada Abstract Company	Tonopah

Niagara Fire Insurance Company:

F. L. Wildes, Attorney in Fact, Carson City

Bank of Sparks	Sparks
Beeson, Mrs. E.	Lovelock
Byington & Hall	Reno
Churchill County Bank	Fallon
Douglas County Farmers Bank	Gardnerville
Ely Securities Company	East Ely
First National Bank of Elko	Elko
Jones, T. A.	Fallon
Leonard, Jas. M.	Carson City
Lockhart, J. M.	Ely
Mason Valley Insurance Agency	Mason
Moore, S. R., & Company	Tonopah
Quigley, P. A.	Lovelock
Sheehan, J.	Winnemucca
Southern Nevada Abstract Company	Tonopah

Norske Lloyd Insurance Company, Ltd.:

George A. Cole, Attorney in Fact, Carson City

North Branch Fire Insurance Company:

C. H. Peters, Attorney in Fact, Carson City

Peters, C. H.	Carson City
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North British and Mercantile Insurance Company:

F. L. Wildes, Attorney in Fact, Carson City

Bank of Sparks	Sparks
Barlow, A. H.	Mason
Condon, J. F.	Verdi
Cook, John S., & Company	Goldfield
Ely Investment Company	Ely
Fairchild, M. D.	Reno
Farmers Bank of Carson Valley	Minden
Goodin & Twigg	Lovelock
Grob, Fred	Fallon
Henderson, John	Elko
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Mulcahy, H. C.	Sparks
Southern Nevada Abstract Company	Tonopah
Vardy, Geo. R.	Wells
Washoe County Bank	Reno
Winnemucca State Bank & Trust Company	Winnemucca
Willis, Geo. F.	Yerington

Northern Assurance Company, Ltd.:

C. R. Carter, Attorney in Fact, Reno

Barlow, A. H.	Mason
Davis, Jas. T.	Carson City
Douglas County Farmers Bank	Gardnerville
Henderson, John	Elko
Jones, Thos. A.	Fallon
Leonard, Jas. M.	Virginia City
Moore, S. R., & Company	Tonopah
Mulcahy Bros.	Sparks
Sheehan, Jerry	Winnemucca
Southern Nevada Abstract Company	Tonopah
Stephoe Agency Company	Ely
Washoe County Bank	Reno

Northern Insurance Company:

Jas. T. Davis, Attorney in Fact, Carson City

North River Insurance Company:

State Agent and Transfer Syndicate, Inc., Attorney in Fact,
Carson City

Carlson, Robt.	.....	Reno
Davison, T. C.	.....	Lovelock
Howard, F. R.	.....	Gardnerville
Kaufman, J. G.	.....	Yerington
Krenkel, F. C.	.....	Winnemucca
Puett, J. W.	.....	Carlin

Northwestern Fire and Marine Insurance Company:

F. G. Clement, Attorney in Fact, Reno

Clement, F. G.	Reno
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Norwegian Assurance Union, Ltd.:

Insurance Commissioner of Nevada, Attorney in Fact,
Carson City

Norwegian Atlas Insurance Company, Ltd.:

State Controller and ex officio Insurance Commissioner of
Nevada, Attorney in Fact, Carson City

Norwich Union Fire Insurance Society, Ltd.:

Chas. H. Peters, Attorney in Fact, Carson City

Bank of Nevada Savings & Trust Company	.....	Reno
Cook, John S., & Company	.....	Goldfield
Farmers Bank of Carson Valley	.....	Minden
Hunter, J. R.	.....	Lovelock
Lockhart, J. M.	.....	Ely
Peters, Chas. H.	.....	Carson City
Sheehan, J.	.....	Winnemucca
Southern Nevada Abstract Company	.....	Tonopah
Taber, A. D.	.....	Elko

Orient Insurance Company:

F. J. Peck, Attorney in Fact, Reno

Fox, Geo. J.	.....	Elko
Leonard, J. M.	.....	Virginia City
Moore, S. R., & Company	.....	Tonopah
Peck & Sample Company	.....	Reno
Read, John T.	.....	Reno
Southern Nevada Abstract Company	.....	Tonopah
Stephoe Agency Company	.....	Ely

Pacific National Fire Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Palatine Insurance Company, Ltd.:

A. C. Helmold, Attorney in Fact, Reno

Cook, John S., & Company	.....	Goldfield
Leonard, Jas. M.	.....	Carson City
Mackay, C. D.	.....	Winnemucca
Moore, S. R., & Company	.....	Tonopah
Mulcahy, P. H.	.....	Sparks
Read, John T.	.....	Reno
Reid, John T.	.....	Lovelock
Taber, A. D.	.....	Elko
Woodliff, Thos., Jr.	.....	Fallon

Paternelle Fire Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Patriotic Assurance Company, Ltd.:

George A. Cole, Attorney in Fact, Carson City

Black & Company	.....	Reno
Moore, S. R., & Company, Inc.	.....	Tonopah

Pennsylvania Fire Insurance Company:

J. M. Leonard, Attorney in Fact, Virginia City

Bank of Wells	.....	Wells
Cowles, R. H.	.....	Wadsworth
Ely Investment Company	.....	Ely

Jones, T. A.	Fallon
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Licking, William	Battle Mountain
McIntosh, J. A.	Lovelock
Russell, Geo., Company	Elko
Sessions & Clement	Reno
Sheehan, J.	Winnemucca
Southern Nevada Abstract Company	Tonopah
Woodard, Harlin J.	Las Vegas

Philadelphia Underwriters:

George S. Hall, Attorney in Fact, Reno

Byington & Hall	Reno
Cook, John S., & Company	Goldfield
Cooper, E. J.	Yerington
Ely Investment Company	Ely
Farmers Bank of Carson Valley	Minden
Franks, G. W.	Pioche
McKnight, Wm.	Carson City
Montrose, Geo. A.	Gardnerville
Nevada First National Bank of Tonopah	Tonopah
Riley, M. M.	Las Vegas
Stephoe Agency Company	Ely
Taber, A. D.	Elko
Winnemucca State Bank & Trust Company	Winnemucca

Phoenix Assurance Company, Ltd.:

Geo. S. Hall, Attorney in Fact, Reno

Byington & Hall	Reno
Mills, Geo. T.	Carson City
Peters, C. H.	Carson City
Southern Nevada Abstract Company	Tonopah
Stephoe Agency Company	Ely
Winnemucca State Bank & Trust Company	Winnemucca

Phoenix Insurance Company of Hartford:

Washoe County Bank, Attorney in Fact, Reno

Bank of Wells	Wells
Black, F. D., & Company	Reno
Goodin & Twigg	Lovelock
Henderson, J.	Elko
Jones, T. A.	Fallon
Lemaire, A. D., & Sons, Inc.	Battle Mountain
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Reynolds, John F.	Sparks
Russell, Geo., Company	Elko
Sheehan, J.	Winnemucca
Stephoe Agency Company	Ely
Washoe County Bank	Reno

Providence-Washington Insurance Company:

C. H. Peters, Attorney in Fact, Carson City

Bank of Nevada Savings & Trust Company	Reno
Farmers Bank of Carson Valley	Minden
Hesson, A. W., & Company	Elko
Lee, M. L., & Company	Pioche
Leonard, Jas. M.	Virginia City
Peters, C. H.	Carson City
Sheehan, J.	Winnemucca

Prudential Re- and Co- Insurance Company, Ltd.;

State Controller of Nevada, Attorney in Fact, Carson City

Queen Insurance Company:

Jas. T. Davis, Attorney in Fact, Carson City

Austin, W. H.	Fernley
Barlow, A. E.	Mason
Bonnifield, Mrs. Helen	Reno
Cook, John S., & Company	Goldfield
Davis, Jas. T.	Carson City
First National Bank of Elko	Elko
Goble, A. W.	Winnemucca
Goodin & Twigg	Lovelock
Harris, Wm. S.	Battle Mountain
Jones, T. A.	Fallon
Leonard, F. E.	Beowawe
Poole, J. D.	Sparks
Sheehan, J.	Winnemucca

Southern Nevada Abstract Company.....	Tonopah
Steptoe Agency Company.....	Ely
Washoe County Bank.....	Reno
Willis, Geo. F.....	Yerington
Woodard, Harlin J.....	Las Vegas

Rochester Department of Great American Insurance Company:

Geo. A. Cole (or his successor in office), Attorney in Fact,
Carson City

Cooper, E. J.....	Yerington
Ely Investment Company.....	Ely
Nevada First National Bank of Tonopah.....	Tonopah
Peck & Sample Company.....	Reno
Taber, A. D.....	Elko

Rossia Insurance Company of America:

Insurance Commissioner of Nevada, Attorney in Fact,
Carson City

Rossia Insurance Company of Russia:

State Controller of Nevada, Attorney in Fact, Carson City

Royal Insurance Company, Ltd.:

Jas. T. Davis, Attorney in Fact, Carson City

Bank of Nevada Savings & Trust Company.....	Reno
Bank of Sparks, Inc.....	Sparks
Bank of Wells.....	Wells
Churchill County Bank.....	Fallon
Condon, J. F.....	Verdi
Cook, John S., & Company.....	Goldfield
Cooper, Edgar J.....	Yerington
Davis, Jas. T.....	Carson City
Douglas County Farmers Bank.....	Gardnerville
Ely Securities Company.....	East Ely
Erickson, C. F.....	Lovelock
Goodin & Twigg.....	Lovelock
Lander County Bank.....	Austin
Lee & Franks.....	Pioche
Lemaire, A. D., & Sons.....	Battle Mountain
Leonard, Jas. M.....	Virginia City
Lillis, Henry M.....	Las Vegas
Lockhart, J. M.....	Ely
Lothrop, John.....	Dayton
Mason Valley Insurance Agency.....	Mason
Reading, A. G.....	Wellington
Richardson, C. M., & Company.....	Deeth
Russell, Geo. Company.....	Elko
Sheehan, J.....	Winnemucca
Skillman, E. A.....	Eureka
Southern Nevada Abstract Company.....	Tonopah
Sprague, Floyd R.....	McDermitt
Steele, Geo. A.....	Fernley
Summerfield, S. M.....	Mina
Whitmore, W. H.....	Midas

Russian Reinsurance Company:

T. R. Hofer, Attorney in Fact, Reno

Salamandra Insurance Company:

Wm. McKnight, Attorney in Fact, Carson City

Scottish Union & National Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Creelman, W. F.....	Reno
Douglas County Farmers Bank.....	Gardnerville
Ely Investment Company.....	Ely
Henderson, Hayden.....	Elko
Henderson, John.....	Elko
Leonard, Jas. M.....	Carson City
Leonard, Jas. M.....	Virginia City
Nevada First National Bank of Tonopah.....	Tonopah
Poole, J. D.....	Sparks
Quigley, I. M.....	Golconda
Reinhart, E., & Company.....	Golconda
Reynolds, John P.....	Sparks
Washoe County Bank.....	Reno
Winnemucca State Bank & Trust Company.....	Winnemucca

Second Russian Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Security Insurance Company:

Insurance Commissioner of Nevada, Attorney in Fact,
Carson City

Skandia Insurance Company:

T. R. Hofer, Attorney in Fact, Reno

Skandinavia Insurance Company, Ltd.:

State Controller of Nevada, Attorney in Fact, Carson City

South Carolina Insurance Company:

Geo. A. Cole, Insurance Commissioner, Attorney in Fact,
Carson City

Springfield Fire & Marine Insurance Company:

A. C. Helmold, Attorney in Fact, Reno

Bank of Nevada Savings & Trust Company.....	Reno
Beard, F. L.	Goldfield
Buol, Peter	Las Vegas
Churchill County Bank	Fallon
Cooper, E. J.	Yerington
Davis, Jas. T.	Carson City
Harris, W. S.	Battle Mountain
Henderson, John	Elko
Lee & Franks	Pioche
Leonard, Jas. M.	Virginia City
Lockhart, J. M.	Ely
Miller, B. F., Jr.	Searchlight
Riley, M. M.	Las Vegas
Sheehan, J.	Winnemucca
Southern Nevada Abstract Company.....	Tonopah
Young, S. R.	Lovelock

Star Insurance Company of America:

State Controller of Nevada, Attorney in Fact, Carson City

Hesson, A. W.	Elko
Hursh, E. H.	Fallon
Lockhart, J. M.	Ely
Walker, F. E.	Verdi
Way, C. M.	Fallon
Winnemucca State Bank & Trust Company	Winnemucca

Sterling Fire Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Harden, Dr. F. A.	Fallon
Sessions & Clement	Reno

St. Paul Fire & Marine Insurance Company:

F. J. Peck, Attorney in Fact, Reno

Henderson, John	Elko
McKnight, Wm.	Carson City
Nevada First National Bank of Tonopah	Tonopah
Steptoe Agency Company	Ely
Washoe County Bank	Reno
Wheelan, John L.	San Francisco, Cal.
Winnemucca State Bank & Trust Company.....	Winnemucca

Sun Insurance Office of London:

C. H. Peters, Attorney in Fact, Carson City

Bank of Nevada Savings & Trust Company.....	Reno
Churchill County Bank	Fallon
Cook, John S., & Company	Goldfield
Henderson, John	Elko
Leonard, Jas. M.	Virginia City
Lockhart, J. M.	Ely
Mills, Geo. T.	Carson City
Moore, S. R., & Company	Tonopah
Peters, C. H.	Carson City
Winnemucca State Bank & Trust Company.....	Winnemucca

Svea Insurance Company:

R. C. Moore, Attorney in Fact, Reno

Cook, John S., & Company	Goldfield
Davidson, Mrs. Josie L.	Yerington
Farmers Bank of Carson Valley	Minden

Henderson, John	Elko
Kappler, Ernest E.	Carlin
Leonard, J. M.	Carson City
Littell, F. L.	Yerington
Lockhart, J. M.	Ely
Lothrop, John	Dayton
Moore, S. R., & Company	Tonopah
Sheehan, J.	Winnemucca
Washoe County Bank	Reno

Swiss Reinsurance Company:

C. H. Peters, Attorney in Fact, Carson City

Union Assurance Society, Ltd.:

C. R. Carter, Attorney in Fact, Reno

Cook, John S. & Company	Goldfield
Creelman, W. F. (Washoe County Bank)	Reno
Douglas County Farmers Bank	Gardnerville
Ely Investment Company	Ely
Henderson, Hayden	Elko
Henderson, John	Elko
Highland, R. J. (Southern Nevada Abstract Co.)	Tonopah
Jones, Thos. A.	Fallon
Leonard, Jas. M.	Carson City
Leonard, Jas. M.	Virginia City
Moore, S. R., & Company, Inc.	Tonopah
Riley, M. M.	Las Vegas
Washoe County Bank	Reno
Whitacre, E. H., Land & Title Company	Yerington
Winnemucca State Bank & Trust Company	Winnemucca

Union and Phenix Espanol Insurance Company:

Jas. T. Davis, Attorney in Fact, Carson City

Union Hispano-American De Seguros, S. A.:

Geo. A. Cole, Insurance Commissioner, Attorney in Fact.

Union Insurance Society of Canton, Ltd.:

Geo. A. Cole, State Controller, Attorney in Fact, Carson City

United States Fire Insurance Company:State Agent & Transfer Syndicate, Attorney in Fact,
Carson City

Peck & Sample Company	Reno
Way, C. M.	Fallon

Urbaine Fire Insurance Company:Insurance Commissioner of Nevada, Attorney in Fact,
Carson City**Vulcan Fire Insurance Company:**

Wm. McKnight, Attorney in Fact, Carson City

Washoe County Bank	Reno
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Warsaw Fire Insurance Company:

Jas. T. Davis, Attorney in Fact, Carson City

Westchester Fire Insurance Company:

Geo. S. Hall, Attorney in Fact, Reno

Barlow, A. H.	Mason
Byington & Hall	Reno
Cook, John S., & Company	Goldfield
Henderson, John	Elko
Kromer, J. W.	Lovelock
Leonard, Jas. M.	Virginia City
Lockhart, J. M.	Ely
Nevada First National Bank of Tonopah	Tonopah
Peters, Chas. H.	Carson City
Poole, J. D.	Sparks
Sheehan, J.	Winnemucca
Way, C. M.	Fallon
Woodard, H. J.	Las Vegas

Western Assurance Company:

State Controller of Nevada, Attorney in Fact, Carson City
 Cook, John S., & Company Goldfield
 Read, John T. Reno
 Southern Nevada Abstract Company Tonopah

AGENTS OF LIFE INSURANCE COMPANIES**Bankers Reserve Life Insurance Company:**

J. Eggers, Attorney in Fact, Reno

Beneficial Life Insurance Company:

N. J. Wadsworth, Attorney in Fact, Panaca

California State Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City
 Rafferty, H. E. Reno
 Tobin, C. L. Winnemucca

Capitol Life Insurance Company:

F. M. Raiff, Attorney in Fact, Reno

Hibbard, W. E. Wendover
 Hillman, H. P. Reno

Columbian National Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City
 Robbins, C. M. Ruth
 Twigg, V. A. Lovelock
 Wright, A. W. Salt Lake City, Utah

Continental Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City
 Caperton, Chas. C. Elko
 Klitzgard, C. J. San Francisco, Cal.
 Neff, J. S. Reno
 Starr, C. A. Reno

Equitable Life Assurance Society of the United States:

Albert T. Donnels, Attorney in Fact, Reno

Carroll, Jas. J. Salt Lake City, Utah
 Horne, John F. McGill
 Kind, J. Clarence Tonopah
 MacArthur, A. D. McGill
 Merrill, Wm. B. Salt Lake City, Utah
 North, Richard C. McGill
 Templeman, Frank Elko
 Thurman, Wm. J. McGill

Home Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City
 Tobin, I. Quincy Salt Lake City, Utah

Idaho State Life Insurance Company:

Insurance Commissioner of Nevada, Attorney in Fact,
 Carson City

Webb, T. J. Lakeview, Oregon

Kansas City Life Insurance Company:

W. H. Simmons, Attorney in Fact, Reno

Carroll, C. A. Elko
 Hunter, W. G. Salt Lake City, Utah
 Milne, E. J. Elko

Missouri State Life Insurance Company:

J. Eggers, Attorney in Fact, Reno

Cottrell, S. A. Salt Lake City, Utah

Mutual Benefit Life Insurance Company:

John W. Eckley, Attorney in Fact, Virginia City

Robinson, Geo. W. Reno
 Stiles, Geo. R. San Francisco, Cal.
 Von Rolf, Th. Los Angeles, Cal.

Mutual Life Insurance Company:

G. M. Sterud, Attorney in Fact, Reno

Beauport, J. E.	Yerington
Biggane, J. W.	Ely
Cavanaugh, T. J.	Tonopah
Cooper, W. B.	Fallon
Doughty, J. C.	Elko
Dyer, H. W.	Austin
Hall, N. W.	Minden
Hillman, H. P.	Sparks
Leonard, J. M.	Virginia City
Lipman, J. A.	Reno
Moore, J. G.	Winnemucca
McAndrews, Alice	Reno
Peters, C. H.	Carson City
Sterud, J. M.	Reno
Strassberg, F. R.	Fallon
Wennhold, W. H.	Minden

National Life Insurance Company:Insurance Commissioner of Nevada, Attorney in Fact.
Carson City

Holland, H. K.	Reno
Landon, Al.	Reno
Templeman, Frank	Elko
Walton, O.	Reno

Nevada State Life Insurance Company:

Antonius, Catherine	Reno
Bank of Wells	Wells
Froman, J. A.	Las Vegas
Lambert, Fred S.	Las Vegas
Longnecker, R. O.	Reno
McCaffrey, W. M.	Reno
Noll, P. H.	Reno
Vogel, H. R.	Reno
Ward, F. O.	Reno

New York Life Insurance Company:

A. P. Ruch, Attorney in Fact, Reno

Berg, Andrew	Battle Mountain
Farrer, R. P.	Reno
Kasal, Henry Y.	Salt Lake City, Utah
Lee, Milton L.	Pioche
Ligon, Wm. B.	Carson City
Madigan, Wm. D.	Reno
Marshall, E. Fayette	Salt Lake City, Utah
Miles, Geo. A.	Austin
McGrath, M. E.	Reno
North, Miles E.	Reno
Preston, L. W.	Ruth
Pryce, Orville U.	Reno
Reynolds, A. E.	Reno
Ross, Earl T.	Reno
Seichiro, Tamaka	Ogden, Utah
Tanino, Tokeo	Ogden, Utah
Uchida, U.	Reno
Wallace, Jas. D.	Ely
Warren, Samuel R.	Elko
Way, Chas. M.	Fallon
Wood, Harry B.	Reno
Zeigler, Peter B.	Reno

Northwestern Mutual Life Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Hoffner, Benjamin J.	Ely
Robinson, Geo. W.	Reno
Ross, Fred F.	Verdi
Von Rolf, Th.	Los Angeles, Cal.
Walter, Wallace A.	Reno
West, Geo. F.	Yerington
Woodard, Harlin J.	Las Vegas

Occidental Life Insurance Company:

Walter B. Linney, Attorney in Fact, Las Vegas

Linney, Walter B.	Las Vegas
Moore, R. S., & Company	Tonopah
Woodard, H. J.	Las Vegas

Pacific Mutual Life Insurance Company:

T. R. Hofer, Attorney in Fact, Reno

Gosse, H. J.	Reno
Haupt, A. U.	Salt Lake City, Utah
Vette, V. C.	Salt Lake City, Utah

Penn Mutual Life Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Conner, Jos. E.	Manhattan
Finley, Arthur	San Francisco, Cal.
Mayer, Leon S.	Reno

Reliance Life Insurance Company:

J. H. Evans, Attorney in Fact, Reno

Union Mutual Life Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

West Coast-San Francisco Life Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Beeghley, Calvin M.	Fallon
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Western States Life Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Christensen, Geo. A.	Kemerer, Wyoming
Lyon, Warran H.	Overton
Rowan, Wm. L.	Bishop, Cal.

AGENTS OF FIDELITY, SURETY, CASUALTY, ETC., COMPANIES

Etna Casualty and Surety Company:

Wm. McKnight, Attorney in Fact, Carson City

First National Bank of Elko	Elko
Moore, S. R., & Company	Tonopah

American Indemnity Company:

Geo. A. Cole, Attorney in Fact, Carson City

American Surety Company:

State Controller of Nevada, Attorney in Fact, Carson City

Ayres, Albert D.	Reno
Baker, Frank E.	Lovelock
Beard, F. L.	Goldfield
Biggane, J. W.	Ely
Byington & Hall	Reno
Campbell, L. G.	Winnemucca
Cann, Eli	Fallon
Carroll, J. J.	McGill
Curler, B. F.	Elko
Flowers, W. J.	Overton
Lawrence, C. T.	Manhattan
Lockhart, John M.	Ely
Mason Valley Insurance Agency	Mason
Moore, S. R., & Company	Tonopah
Plummer, Mrs. Edna Covert	Palisade
Reinhart, Moses	Winnemucca
Riley, M. M.	Las Vegas
Scott, John W.	Carlin
Sheehan, J.	Winnemucca
Way, C. M.	Fallon

Continental Casualty Company:Insurance Commissioner of Nevada, Attorney in Fact,
Carson City

Callahan, M. T.	Reno
Cobb, Elmer G.	Reno
Ferree, V. M.	Ogden, Utah
Finnerty, J. E.	Sacramento, Cal.
Hamilton, Louis	Las Vegas
Liston, F. G.	Reno
Unsworth, H.	Reno
Wolfgang, M. H.	Los Angeles, Cal.

Employers' Liability Assurance Corporation, Ltd.:

T. R. Hofer, Attorney in Fact, Reno

McAndrews, Alice M.	Reno
Stephoe Agency Company	Ely

Fidelity & Deposit Company of Maryland:

State Controller of Nevada, Attorney in Fact, Carson City

Sessions & Clement	Reno
Steptoe Agency Company	Ely
Title Guarantees & Trust Company	Elko

Hartford Accident & Indemnity Company:

Geo. A. Cole, Attorney in Fact, Carson City

Burton, C. F. (livestock insurance)	Reno
Cooper, E. J.	Yerington
Davison, T. C.	Lovelock
Harden, Dr. F. A. (livestock insurance)	Fallon
Sessions & Clement	Reno
State Bank & Trust Company (livestock insurance)	Reno
Winnemucca State Bank & Trust Company	Winnemucca

Hartford Steam Boiler Inspection & Insurance Company:

F. J. Peck, Attorney in Fact, Reno

Davison, F. C.	Lovelock
Peck & Sample Company	Reno
Scheeline Banking and Trust Company	Reno

Interstate Casualty Company:

Geo. A. Cole, Attorney in Fact, Carson City

Agency Company	Salt Lake City, Utah
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Lloyds Plate Glass Insurance Company:

Lee J. Davis, Attorney in Fact, Reno

Cooper, E. J.	Yerington
Goodin & Twigg	Lovelock
Henderson, John	Elko
Mulcahy, H. C.	Sparks
Nevada First National Bank of Tonopah	Tonopah
Peck & Sample Company	Reno
Steptoe Agency Company	Ely
Washoe County Bank	Reno
Whelan, John L.	San Francisco, Cal.
Winnemucca State Bank & Trust Company	Winnemucca

Maryland Casualty Company:

J. Eggers, Attorney in Fact, Reno

Byington & Hall	Reno
Peck & Sample Company	Reno
Sessions & Clement	Reno
Stotesbury, J. H.	Reno

Massachusetts Bonding & Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Callahan & Brandon	Winnemucca
Cook, H. B.	Kimberly
Flagg, M. J.	Reno
Goodman, B. B.	Lovelock
Hillman, H. P.	Reno
Mayer, Leon S.	Reno
Title Guarantee & Trust Company	Elko

National Casualty Company:

State Controller of Nevada, Attorney in Fact, Carson City

Johnson, Leon	Detroit, Michigan
Redington, Chas. H.	Detroit, Michigan
Woodard, H. J.	Las Vegas

National Surety Company:

State Controller of Nevada, Attorney in Fact, Carson City

Adams, W. G.	Battle Mountain
Badt, Mel S.	Wells
Boone, H. H.	Gardnerville
Dyer, H. W.	Austin
Edwards, E. Carter	Goldfield
Ennor, E. E.	Elko
Fairchild, M. D.	Reno
Farmers & Merchants National Bank	Reno
Gardiner, W. M.	Reno
Goodin, Jas. T.	Lovelock
Grob, Fred	Fallon
Henderson, John	Elko

Lee, M. L.	Pioche
Leonard, Jas. M.	Virginia City
Marsh, H. G.	Minden
Miller, J. H.	Hawthorne
Montrose, Geo. A.	Gardnerville
McKnight, Wm.	Carson City
Nevada First National Bank of Tonopah	Tonopah
Oldfield, F. D.	Ely
Peck, F. J.	Reno
Skillman, Edward A.	Eureka
Sprague, F. R.	McDermitt
Travers, Cecil J.	Winnemucca
Twigg, V. A.	Lovelock
White, J. H.	Hawthorne
Woodard, Harlin	Las Vegas

New York Plate Glass Insurance Company:

F. G. Clement, Attorney in Fact, Reno

Cook, J. S., & Company	Goldfield
Ely Investment Company	Ely
First National Bank of Winnemucca	Winnemucca
Jones, T. A.	Fallon
Moore, S. R., & Company	Tonopah
Riley, M. M.	Las Vegas
Russell, Geo., & Company	Elko
Sessions & Clement	Reno
Southern Nevada Abstract Company	Tonopah

North American Accident Insurance Company:

State Controller of Nevada, Attorney in Fact, Carson City

Johnson, H. M.	Reno
Miller, Harry	Reno
Neff, J. S.	Reno
Young, Chas. C.	Reno
Young, Mrs. Mabel	Yerington

Standard Accident Insurance Company:

J. M. Morrow, Attorney in Fact, Elko

Vanderlieth, E. D.	Carson City
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Travelers' Insurance Company:

Geo. A. Cole, Attorney in Fact, Carson City

Born, Paul E.	Winnemucca
Cullen, Jess J.	Elko
Hannibal, Hardy W.	Hasen
Heaton, John M.	Las Vegas
Koehler, Henry H.	Fallon
Peck, John E.	Tonopah
Reynolds, A. E.	Auburn, Cal.
Reynolds, Leslie H.	Auburn, Cal.
Smith, Jesse E.	Reno
Wood, Herbert F.	Goldfield

United States Fidelity & Guaranty Company:

J. Eggers, Attorney in Fact, Reno

Bingham, C. E.	Fallon
Cook, John S., & Company	Goldfield
Douglas County Farmers Bank	Gardnerville
Farmers Bank of Carson Valley	Minden
Foster, Sidney	Reno
Henderson, John	Elko
La Tourrette, E. S.	Carson City
Lovelock Mercantile Banking Company	Lovelock
Mashburn, Gray	Virginia City
Peters, C. H.	Carson City
Robbins, C. E.	Winnemucca
Sciuchetti, Lena C.	Austin
Southern Nevada Abstract Company	Tonopah
Washoe County Bank	Reno
Whitacre, E. H.	Yerington
Witcher, Arthur B.	Ely
Woodard, Harlin J.	Las Vegas

PUBLIC SERVICE DIVISION
UNIVERSITY OF NEVADA

REPORT

OF THE

Department of Food and Drugs Control, Weights and Measures, and Soils and Water Laboratory

FOR THE

PERIOD ENDING DECEMBER 31, 1918

PUBLISHED BY THE UNIVERSITY OF NEVADA
RENO, NEVADA



CARSON CITY, NEVADA
STATE PRINTING OFFICE—JOE FARNSWORTH, SUPERINTENDENT
1919



FOOD AND DRUGS CONTROL AND WEIGHTS AND MEASURES

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*Sanford Crosby Dinsmore, B.S.....	Commissioner and Chemist
Halbert B. Bulmer, B.S.....	Acting Commissioner and Chemist
Miles B. Kennedy, B.S.....	Assistant Chemist
Sybil Hartung.....	Stenographer

*On leave of absence for war service.

LETTERS OF TRANSMITTAL

RENO, NEVADA, December 31, 1918.

DR. WALTER E. CLARK, *President, University of Nevada.*

DEAR SIR: I have the honor to submit herewith the Report of the Department of Food and Drugs Control, Weights and Measures, and Soils and Water Laboratory for the period ending December 31, 1918.

HALBERT B. BULMER,
Acting Commissioner.

RENO, NEVADA, December 31, 1918.

To His Excellency, EMMET D. BOYLE, Governor of Nevada.

SIR: The Board of Regents of the University of Nevada has the honor to submit the Report of the Department of Food and Drugs Control, Weights and Measures, and Soils and Water Laboratory for the period ending December 31, 1918.

J. F. ABEL,
Chairman.

DEPARTMENT OF FOOD AND DRUGS

The work of this Department has been pursued during the last two years along much the same lines as in preceding years. The idea has been to enforce the laws without partiality, and to use the funds of the State with economy, and in such a manner as to secure a maximum return in service to the State. This has been accomplished with but half the usual working force.

Nevada is not a manufacturing State, consequently it is fairly easy to watch shipments of foods, drugs and liquors into the State, and to inspect our retail and wholesale establishments. It is rarely that we find any cases of misbranding or adulteration. Our merchants are very discriminating, as a whole, and in consequence one finds the best grade of foods of all kinds on the shelves of our retailers.

More attention during the last year has been given to the sanitary inspection of places where food is manufactured, stored, or offered for sale. Inspections are made of storage plants, grocery stores, meat-markets, restaurants, bakeries, confectionery stores, ice-cream plants, creameries and hotels.

Heretofore it has been the policy of this Department to point out to the proprietors or managers irregularities and unsanitary conditions. Very satisfactory and effective results have been accomplished by taking legal action under section 14 of the Food and Drug Act, which says in part: "If, in the opinion of said Commissioner, or any agent of said Experiment Station, after an investigation of any place where foods, drugs, or liquors are prepared, sold, or offered for sale, the same is operated in an unclean or unsanitary manner, the Commissioner or other agent shall notify in writing the person operating such place to put the same in a clean and sanitary condition within a reasonable time, to be stated in said notice." Failure to comply with this order subjects the person or persons so doing to all the penalties as provided for in the Food and Drugs Act.

In this report the usual custom of giving a tabulated list of all places inspected has not been followed, but instead our endeavor has been, under the more important heads, to place the same in an interesting and readable manner, so that the ordinary layman, besides getting a summary of the Department's activities, may also gain information of value that he may apply to every-day life.

CHANGES IN THE DEPARTMENT

In June, 1917, Mr. Albert M. Jackson, Chemist of this Department, resigned to enter the United States Army. He is now a Captain of Coast Artillery stationed at Fort Hancock, New Jersey.

On August 1, 1917, Mr. Miles B. Kennedy was appointed to fill the vacancy caused by the resignation of Mr. Jackson.

In October Wayne B. Adams, Assistant Chemist, entered the Officers' Training Camp at Camp Kearney, was commissioned Second Lieutenant and is now in France.

On January 1, 1918, Mr. Sanford C. Dinsmore, Commissioner, entered the service as a First Lieutenant in the Department of Food

and Nutrition. After spending several months doing inspection work in the army cantonments he was ordered to France for similar work.

Mr. H. B. Bulmer, Deputy Commissioner, was appointed Acting Commissioner on January 1, 1918, to fill the vacancy caused by the departure of Commissioner Dinsmore.

During the latter part of 1918, this laboratory has undergone many needed improvements and is now in excellent condition. Some needed equipment has been added to the laboratory.

CHANGES IN THE LAW

Section 4 of the Food and Drug Act was amended to read as follows: "Ninth—In the case of vinegar: If it be artificially colored."

Section 19, "The Seizure Clause," was amended so as to allow the Commissioner or his duly appointed inspectors or agents power to seize any adulterated, misbranded or suspected goods without a warrant.

FOOD AND FOOD VALUES

Many people fail to realize that the primary use of foods is to supply the body with warmth, energy and the necessary materials for rebuilding such parts of the body as have been worn out in the act of living. The pangs of hunger are simply the outcry of nature that necessary material shall be supplied to repair bodily wastes and furnish fuel to create energy to run the human machine.

When we satisfy the pangs of hunger we are apt to do so without much regard as to the suitability of the food used or its comparative cost with other foods of similar composition.

THE HIGH COST OF LIVING

Much discussion is now being had over the high cost of living. The tremendous advance in the prices of nearly all foods has brought much hardships to the masses of people.

The food problem today is a very real one, due to the conditions brought on by the war. Even before the war more food was consumed in Europe than was produced there, and now with the millions of men in service and a large percentage of fertile lands laid waste the problem is very serious. America has more food than any other country, and the United States must share this food with the Allies. She must feed her men abroad, and also take care of the people at home.

There is enough food if it is distributed wisely. It is possible to do this only when everyone understands the real nature of the situation.

It is the home-maker who can do the most, for it is she who buys the food and prepares it for the family.

But in order to economize wisely, without endangering the health of her family, she must have a working knowledge of food, and understand fully its functions in the body; she must also understand what foods must be conserved, and why.

The body must be kept clean and warm. It must be provided with material to rebuild broken-down tissues and build new tissues; with material to use in forming heat, and nervous and muscular energy; and with material to regulate the body processes. Food performs all this work for the body. It is, generally speaking, divided into four different groups, each of which has its own special function. If the

with an adequate and ideal diet. If she will study the food groups and see what foods must be sent to Europe, and substitute for them, as far as possible, other foods from the same group, she will be doing her "bit," and her bit is a big one.

PROTEIN

The first and most important group is the protein group. This class of food builds up broken-down tissues, forms new tissues, and can also be used as a source of heat and nervous and muscular energy. It should, however, not be compelled to do double duty, and if we do not keep in our diet enough of the foods whose work it is to furnish the heat and energy the protein, or muscle-building food, will be used and our bodies will suffer. The examples of the protein food are from the animal kingdom—meat, fish, eggs, cheese and milk; and from the vegetable kingdom—wheat, beans, lentils, peas, and nuts.

CARBOHYDRATES

The second group is called the carbohydrates, and they are used in the body as a source of nervous and muscular energy. Under this class we find the starchy foods, such as potatoes, macaroni, rice, bread, cereals, crackers, etc.; and the sugars, such as syrups, honey, jellies, and candies.

FATS AND OILS

The third group is represented by the fats and oils, such as butter, cream, olive oil, bacon, salt pork, and, in fact, all the edible fats and oils. Their special work is similar to that of the carbohydrates—the yielding of heat and energy. They do not build and repair, and must not be used alone. There is little danger, however, for their very nature makes it impossible to eat a diet of pure fat. They are of special value as heat-giving foods, and for this reason we find more fat included in the diets during the winter months and in the diet of people living in cold climates. On the whole, fats are harder to digest than the carbohydrates, with the exception of butter, cream, and bacon, all of which are easily and quite completely digested. Here it may be well to say a word about butter-fat. It has certain peculiar characteristics which make it necessary to the diet, especially that of children and invalids. The best grade of oleomargarine which contains from one-third to one-fourth parts butter-fat, may be substituted in part for butter if enough whole milk is included in the diet, but it is better to use butter substitutes for adults and for cooking purposes and keep butter in the dietary of the child and the invalid.

MINERALS

Our fourth and last group, and by no means the least, is the mineral salts, with which is grouped the water. The mineral matter is very essential. Too much cannot be said upon that subject. It is absolutely necessary in the blood, and needed to keep the bones and teeth in good condition. Minerals are found in varying amounts in nearly all foods, but those particularly rich in these salts are the fresh fruits.

green vegetables, milk and eggs. In the diet for growing children, when bones and teeth are being constantly formed, plenty of mineral food is required. If the child does not have sufficient mineral food he will probably spend much time with the dentist in his latter years. One of the best ways to keep mineral in the diet of the child is to give him milk daily, a quart if possible, if not two glasses until he is at least 12 years old.

We must remember, too, that minerals are soluble in water, and if the vegetables, which are valued chiefly for their minerals, are cooked or soaked in water, and the water thrown away, the minerals will be almost wholly lost. It is always best to bake or steam vegetables, cook them in their jackets, or, if they are cooked in water, to use only a small amount so that it may be served with them. If, however, a large amount of water is used, it must never be thrown away, but must be utilized in some way, such as cream soups, cream sauces or gravies.

Let us now consider the water. It regulates the temperature of the body, aids digestion, quenches the thirst, and is needed in the blood and in every tissue of the body. One of its chief functions, however, is to regulate the body processes, and to carry off the waste matter. Few people drink too much water, but many fail to drink enough.

If a mother can train her child to drink at least two glasses of water the first thing every morning, and one glass on going to bed, she will have laid one of the cornerstones for his future health. This can be made as much a part of the daily routine as the brushing of the teeth and is quite as important. Besides this, at least one quart of water should be taken daily.

Something should also be said about the laxative quality of food. Often the diet does not contain enough bulky or indigestible fibrous substances, which keeps the intestines full enough to stimulate their muscular movements, and so keep the body healthy. Such substances are found in vegetables, especially green vegetables, cereals, coarse breads and the fruits, which not only furnish bulk, but acid, which also stimulates the action of the intestines.

That the diet should contain each of the food factors is true, but that the food should be prepared and served in a manner as attractive and appetizing as possible is also important. Cooking develops the flavor, changes the food into forms easier to masticate and digest, and destroys any bacteria which may be present. Good cooking is really the first stage in digestion, and the one the housekeeper can and should control. Food that is unappetizing does not stimulate the flow of the digestive juices, and is often incompletely digested, or, because of its unattractiveness, is not eaten, and so we get much plate-waste that could be avoided were the foods always temptingly served.

The food problem, then, is a real and vital one, and the home-maker who has the welfare of her family at heart should make a thorough study of the food principles and then apply her knowledge to the best of her ability. She can render no greater service than that of providing attractive, tempting meals, so arranged that they contain all the food elements needed in the body, and yet do not contain to any great extent those foods that we must at the present time do our utmost to conserve.

(b) *Vegetable Kingdom*—Dried peas, dried beans, dry lentils, wheat, nuts.

2. Carbohydrate or heat- and energy-forming food.

(a) *Starches*—Potatoes, rice, macaroni, spaghetti, hominy, cereal, breakfast foods, bread, crackers, bananas.

(b) *Sugars*—Syrups, honey, molasses, jellies, candies, most fresh fruits, dried fruits.

3. Fats and oils, heat- and energy-yielding.

Butter, cream, olive oil, bacon, salt pork, oleomargarine, nutmargarine, peanut butter.

4. Mineral matter and water builds bone and teeth and purifies blood.

(a) *Mineral Matter*—Vegetables, especially the green vegetables, fresh fruits, milk, berries, cereals.

(b) *Water*—Water purifies body, regulates body processes.

5. Foods rich in both protein and carbohydrates.

Milk, peas, beans, bananas, wheat.

6. Foods rich in both protein and fat.

Wheat, milk, nuts, peanut butter, cheese, eggs, fat meats, fat fish.

Include in diet each day food from each group.

FOOD AND THE CALORIE

Much is being said about the term calorie today, and it is well for us to understand just what it is. Not only do we need to know about the kinds of food and their function in the body, but we must also know the amounts of food necessary to supply the body requirements under various conditions.

There is an accepted standard or unit of comparison by which we can estimate the value of everything. For example, the unit of weight is the pound, the unit of measure is the pint, the unit of length the inch, the unit of currency the dollar, and the unit of heat the calorie. Experiments have been made to determine this fuel value of different foodstuffs and the amount of heat required to raise one kilogram of water on degree centigrade—or in other words, one pound or one pint of water four degrees Fahrenheit is called the calorie of food unit.

A simple method of computing the individual dietary has been arranged by Professor Irving Fisher of Yale, giving the food in "standard portions" or in amounts containing 100 calories, with the number of calories of protein, fat and carbohydrate in each 100 calories. These "standard portions" are for the most part ordinary servings, or a multiple of a serving. For example, two-thirds of a glass of milk is a 100-calorie or standard portion, and contains 19 calories of protein, 52 calories of fat and 29 calories of carbohydrate. By this method it is comparatively easy to reckon mentally the food value of one's daily diet.

The fuel value of food has been established as follows:

Protein: 4.1 calories per gram or 1.860 calories per lb.

Fat: 9.3 calories per gram or 42.18 calories per lb.

Carbohydrate: 4.1 calories per gram or 1.860 calories per lb.

To find out then the total energy taken into the body in the form of food we must first weigh each article of food, ascertain from some one of the various tables on record the per cent of protein, fat and carbohydrate it contains, and multiply this per cent by its proper calorific value and add the results.

The value of the calorific knowledge of food can easily be seen when we realize that the same number of food calories may be bought at a large range of prices, and that we can, with this knowledge, easily reduce the food bill without endangering the health. But we must always remember that at least 10 per cent of the total calories must come from the protein food, for this is the only food to give us the building material.

The time may come in a generation or so when food will either be sold by calories or, if sold by measure and weight, the housekeeper will think of it in terms of calories.

Above all, we must not forget that an adequate diet must not only contain the right food in sufficient amounts, but it must be made acceptable by serving well-flavored meals in an attractive manner. Even the simplest, most inexpensive meal may be made palatable if well-seasoned and daintily served.

The following table gives the composition of food materials and the fuel value in calories per pound:

COMPOSITION OF FOOD MATERIALS

Kind of food	Protein	Fat	Carbohydrates	Ash	Water	Fuel value calories per pound
Olive oil		100.0				4080
Bacon	9.4	87.4		4.4	18.8	3000
Beef suet	4.7	81.8		0.3	13.2	2510
Butter	1.0	85.0		3.0	11.0	2410
Lard		100.0				4080
Whole milk	3.3	4.0	5.0	0.7	87.0	310
Skin milk	3.4	0.3	5.1	0.7	90.5	165
Buttermilk	3.0	0.5	4.8	0.7	91.0	160
Cream	2.5	18.5	4.5	0.5	74.0	855
Whole egg	14.8	10.5		1.0	73.7	700
White of egg	13.0	0.2		0.6	86.2	265
Yolk of egg	16.1	33.2		1.1	49.5	1608
Cream cheese	25.9	33.7	2.4	3.8	34.2	1560
Cottage cheese	20.9	1.0	4.3	1.8	72.0	510
Lamb chop	17.6	28.3		1.0	53.1	1540
Pork chop	16.9	30.1		1.0	52.0	1580
Smoked ham	16.1	38.8		4.8	40.3	1940
Beef steak	18.6	18.5		1.0	61.0	1120
Dried beef	30.0	6.6		9.1	54.3	890
Cod lean fish	15.8	0.4		1.2	82.6	325
Salt cod	21.5	0.3		24.7	53.5	510
Oyster	6.2	1.2	3.7	2.0	86.9	235
Smoked herring	36.4	15.8		13.2	34.6	1355
Mackerel, fresh	18.3	7.1		1.2	73.4	645
Shelled bean	9.4	0.6	29.1	2.0	58.9	740
Navy bean, dry green	22.5	1.8	59.6	3.5	12.6	1600
String bean	2.3	0.3	7.4	0.8	89.2	196
Corn, green	3.1	1.1	19.7	0.7	75.4	300
Apple	0.4	0.5	14.0	0.3	84.6	290
Dried fig	4.3	0.3	74.2	2.4	18.8	1475
Strawberry	1.0	0.6	7.4	0.6	90.4	190
Banana	1.3	0.6	22.0	0.8	75.3	460
Corn	10.0	4.8	73.4	1.5	10.3	1280
Wheat	12.2	1.7	73.7	1.8	10.6	1750
Buckwheat	10.0	2.2	73.2	2.0	12.6	1600
Oat	11.8	5.0	60.2	30.0	11.0	1720

Rice	8.0	2.0	77.0	1.0	12.0	1720
Rye	12.2	1.5	73.0	1.9	10.5	1750
White bread	9.2	1.3	53.1	1.1	35.3	1215
Whole wheat bread, oat	9.7	0.9	49.7	1.3	38.4	1140
Breakfast food (cooked)	2.8	0.5	11.5	0.7	84.5	235
Toasted bread	11.5	1.6	61.2	1.7	24.0	1420
Corn bread	7.9	4.7	46.3	2.2	38.9	1205
Macaroni	2.0	1.5	15.8	1.3	78.4	415
Sugar, granulated			100.0			1890
Molasses	2.4		60.3	3.2	25.1	1290
Stick candy			96.5	0.5	3.0	1785
Maple syrup or sugar			82.8	0.9	16.3	1540
Honey	0.4		81.2	0.2	18.2	1520
Parsnip	1.6	0.5	13.5	1.4	83.0	230
Onion	1.6	0.3	9.9	0.6	87.6	225
Potato	2.2	0.1	18.4	1.0	78.3	385
Celery	1.1		3.4	1.0	95.4	85
Grapes	1.3	1.6	19.2	0.5	77.4	450
Raisins	2.6	3.3	76.1	3.4	14.6	1605
Canned fruit	1.1	0.1	21.1	0.5	77.2	415
Fruit jelly			78.3	0.7	21.0	1455
Grape juice	0.2		7.4	0.2	92.2	150
Walnut	16.6	68.4	16.1	1.4	2.5	3285
Chestnut	10.7	7.0	74.2	2.2	5.9	1875
Peanut	25.8	38.6	22.4	2.0	0.2	2500
Peanut butter	29.3	46.5	17.1	5.0	2.1	2825
Cocoonut (desiccated)	6.3	57.4	31.5	1.3	3.5	3125

BUTTER

Seventy-five samples of butter have been examined during the year. The majority of the samples were, however, not examined for the purpose of the detection of fraud, but for the State Official Scoring Contests. This work is done by this department in conjunction with Professor V. E. Scott of the Extension Department.

Following is the result of the Butter-scoring Contest held in December, 1917.

Detailed Score

Name and address of creamery	Commercial score	Composition, analysis and score							
		Moisture		Salt		Color score	Curd score	Analy- sis score	Final score
		Per cent	Score	Per cent	Score				
Mutual, Reno	94.5	15.3	25	3.2	28	35.0	10	98.0	96.2
Churchill, Fallon	94.0	11.0	0	1.8	24	33.5	10	67.5	80.0
Nevada Pack., Reno	94.0	15.3	25	3.7	25	35.0	10	95.0	94.5
Yerington, Mason	94.0	13.5	14	3.2	28	32.0	10	80.0	88.5
Eagle Brand, Carson	93.5	12.0	5	1.8	23	35.0	10	73.0	83.3
Mutual, Reno	93.5	15.2	25	3.9	21	33.5	10	89.0	88.5
Lovelock, Lovelock	93.0	12.8	13	2.4	29	32.0	10	84.0	88.5
Churchill, Fallon	93.0	12.0	5	2.2	29	32.0	10	74.0	83.5
Isleton, Cal.	92.5	13.3	18	3.2	28	34.0	10	90.0	91.3
Cliff Bros., Franktown	90.0	12.4	9	2.4	29	32.0	10	80.0	85.0
Monarch Brand, Reno	84.5	15.8	25	5.0	10	35.0	10	80.0	82.3

Perfect composition scores are as follows: Moisture, between 14 and 16 per cent, 25; salt, between 2.5 and 3 per cent, 30; color, 35; curd, 10.

A very common fault in this butter is a sticky appearance which probably due to a lack of moisture. A much better body will result when the moisture is between 14 and 15.5 per cent. The high scores in most cases show that the cream is in pretty good condition.

brought in but the composition and body show that the buttermakers have not yet adapted their cream temperatures to winter conditions.

CANNED GOODS

Cans whose ends bulge ever so slightly are not merchantable and customers should return them to the store. The bulged end is a reasonable "warning sign" and should be so regarded. This condition does not necessarily mean decomposition when found in the retail trade. With nonacid foods, such as peas or corn, "swells," as they are popularly termed, are usually due to decomposition, be the amount of swelling ever so little. On the other hand, spoilage rarely occurs with acid fruits, unless the can be leaking. In this class of products the swelling of the can is almost invariably due to hydrogen set free by the action of the fruit-acid on the metal of the container. The amount of hydrogen liberated in this manner depends to a certain extent on the age of the sample, but to a much greater extent on the conditions of storage. It is influenced little by the method of canning, or by conditions within the control of the packer.

We have examined 15 samples of canned goods. Four cans of blackberries were taken from a lot representing 10 cases, or 120 cans, that were stored in a local warehouse. An examination of the cans and contents showed evidences which rendered them unfit for human food. The goods were condemned and the entire lot destroyed. Four cans of solid pack apples were submitted by a local wholesale grocer. These represented a total of 64 cases or 384 large cans. The contents of two of the samples showed evidences of decomposition and putrefaction, changes taking place which rendered them unfit for human food. On going over the cases of canned apples a large number of the cans were found to be split open and the contents leaked out. All the cans that were leaky or showed signs of decomposition were destroyed.

EGGS AND EGG SUBSTITUTES

Within recent years so-called egg substitutes have appeared on the market with very little merit or legitimate warrant for their manufacture.

When we consider what part eggs play in cooking, apart from their nutritive qualities, it must be evident that from two to four ounces or less of a yellow powder cannot possibly represent the nutritive value of two or three dozen eggs. When eggs are used in doughs, batters, etc., it is usually for the sake of the leavening effect which they contribute or for their coagulating or thickening properties. The leavening property is due to the viscosity of the egg, which entangles air bubbles and holds them in the batter or dough until the subsequent heat of baking set or coagulates the egg, and brings about a permanent condition of lightness in a product which has been beaten or mixed with baking powder or other leavening agent, or in an article containing no baking powder, as a custard.

Eggs are considered almost indispensable in culinary operations and when the price of eggs remain steadily high, and sometimes soar to an almost prohibitive point, it is little wonder that the consuming public are led astray by the labels and extravagant claims and duped into purchasing articles which are sold under the pretext of furthering

economy, while really adding to the high cost of living on account of the small value really received for the money expended. The analyses of some of these egg substitutes follows:

Eggs and Egg Substitutes

Name of article	Percentage of fat	Percentage of protein	Percentage of ash	Remarks
Egg-saver	0.26	0.70	0.25	..... Principally cornstarch
Eggine	0.95	32.00	6.30	..... About half cornstarch
Egg-kon-o-my	1.60	3.85	3.70	..... Principally cornstarch
Eggnit	1.10	7.26	7.00	..... Principally cornstarch
Egg-o-lieu	1.50	5.25	1.50	..... Principally cornstarch
Egla	0.22	3.23	1.05	..... Principally cornstarch
Egg-conservar	0.37	23.88	3.65	..... Over half cornstarch
Sa-van-egg	2.05	5.15	3.90	..... Principally cornstarch

Mixed whole egg, white and yolk, contains about 74 per cent water, 15 per cent protein, 10 per cent fat and one per cent ash. Dried egg, which sells at a price corresponding to about 40 cents a dozen of fresh eggs, has the following composition. Water 22 per cent, fat 30 per cent, protein 45 per cent, and ash 3 per cent.

A whole egg will average slightly less than one-half ounce of dried egg, equivalent to about four rounded teaspoons.

An egg of average size has a nutritive value of 75 calories. Three dozen eggs would have a total food value of 2,700 calories. The nutritive value of the ingredients commonly used in these egg-substitutes is 100 calories per each ounce, or 400 calories for the largest package found. Therefore the nutritive value of the largest package is less than one-sixth that of the number of eggs it claims to replace.

During the month of August, 1918, two dozen eggs that had been exposed to ammonia fumes were submitted to this laboratory for the purpose of ascertaining if there was any way of getting rid of the ammonia and restoring the eggs to normal.

The eggs were submitted to several tests, such as placing in acid fumes, placing in vacuum the whole egg and the broken egg, frying, scrambling, drying in the oven, etc. But it was impossible to entirely extract the fumes, or to render the eggs palatable when cooked.

FEEDING STUFFS

Very effective work was done in the inspection of cottonseed cake and meal shipments into this State during the last two years. Carload lots were checked and sampled in all sections of the State. Inasmuch as we have no feeding-stuffs laws this work was done in cooperation with the Department of Agriculture, the Commissioner of this Department being empowered to collect and take samples the same as a U. S. Inspector. Where it was impossible to sample cottonseed at the time of unloading samples were taken of the broken shipments and examined at this laboratory. Several samples of alfalfa meals, molasses feeds, poultry foods, and proprietary stock goods were also examined.

Cottonseed meal is generally recognized as a product of the cotton seed only, composed principally of the kernel, with such portions of the hull as is necessary in the manufacture of oil, and as containing least 36 per cent protein. Cottonseed feed, which may more properly be labeled "Cottonseed meal and hulls," is generally recognized

mixture of cottonseed meal and cottonseed hull, containing less than 36 per cent protein.

Buyers should distinguish carefully between cottonseed meal and cottonseed feed. While cottonseed feed containing a reasonable quantity of cottonseed meal is a good food, the hulls have a very low feeding value as compared with the meal. The mixture, having less food value, should sell for a less price than cottonseed meal.

MILK

Six hundred and ninety-five samples of milk were collected in every section of the State. One prosecution was instituted in the Ely District. While marked improvement has been made in the care and handling of this very important food, particularly in the larger towns, still there is much to improve upon. It is the policy of this Department to advise and assist in every way possible. In the Ely District, where dairy conditions were far from what they should have been, immediate steps were taken to remedy existing conditions; due mostly to location, drainage and poor water supply.

ICE-CREAM

One hundred and eighty-five samples of ice-cream were collected and examined. We are pleased to say that the ice-cream offered for sale throughout the State has been well above the standard. But one case was filed, and that upon a sample collected in Goldfield, manufactured in Los Angeles, and not being up to our State butter-fat requirement.

MISCELLANEOUS SAMPLES

One hundred and two miscellaneous samples were examined during the last year.

Mill tailing samples were submitted from the cyanide plants along the Carson River and from the Yerington District to determine the cyanide content, complaints having been filed of loss of cattle and sheep from drinking from said polluted streams.

Samples of sewage, taken before entering septic tanks and upon leaving same, were submitted in order to ascertain the sanitary condition of the water after treatment in the septic tanks.

Samples of silica were received with the request that they be analyzed and reported as to their commercial value as cleansers and polishing materials.

From the Government and local police officials throughout the State we have received a large number of drug samples for morphine content; and also quite a number of samples of "doped" or poisoned whisky, wine, and cider.

From every section of the State samples were sent in to be tested for ground glass. These consisted of sugar, potato flour, candy, peanut butter, chocolate marshmallows, ground chocolate, chewing-gum, rolled oats, sego, etc. In most of these there was a small fraction of one per cent of hard particles, in some sand, and in others the hard outer shell of the product had been ground up with the finished article. Only in one case was glass found in a marshmallow. Samples purchased immediately after the finding of all kinds of candy on sale at this store showed no evidence of glass. This was immediately taken up with the manufacturer in San Francisco and after a thorough inspection of the

plant we felt satisfied that the glass had been accidentally introduced through the breaking of an extract bottle while mixing.

A sample of hamburger steak, collected from one of our local markets in Reno, was found unfit for human consumption. The entire lot was seized and destroyed.

A large piece of what was thought to be blasting powder was found upon one of the bridges east of Sparks. An examination showed it to be solidified gun-powder, burned with but little heat and with no explosion.

Samples of chicken-feed were submitted. These were found to be buttermilk boiled down to a thick paste; when diluted for feeding, as directed in the circular, the analysis showed it to contain less protein but more lactic acid than straight buttermilk, and does not contain more food value than good buttermilk.

Several packages of bandages were submitted by Red Cross Chapters throughout the State, for examination for poisoning. In one case only did we find evidence of anything of a dangerous nature, and that was stained with copper; whether this was done with evil intent or in some accidental manner we were unable to determine. The stains on the other samples were found to be streaks of oil, probably through careless handling in the factory.

RESTAURANTS

Inspections of restaurants were made over the State on each visit to different sections. Several actions were taken as provided for in section 14 of the Food and Drugs Act. The following instructions, if lived up to by the restaurant-keepers throughout the State, will not only give them a good score upon inspection but will increase their patronage or business through the improved appearance of the place, even though the buildings may be poorly constructed:

Keep your hands clean at all times, and the nails short and clean.

While serving food or handling same do not put your fingers to your nose, mouth or hair.

Handle spoons, knives and forks by their handles only, and and keep your fingers from the inside of cups, tumblers or glasses.

Never spit about the restaurant, and cover your mouth when coughing or sneezing.

Do not permit food to come in contact with your clothes.

Have a locker or closet for clothes.

Wear clean aprons and clothing at all times.

Under no circumstances are you to serve food which has been returned by some previous customer.

Keep food from being exposed to flies and dust.

Exterminate all vermin such as rats, mice, roaches, etc.

If there is sickness in your family or where you reside inform your employer, or the health officer.

Be cleanly by all means.

SODA FOUNTAINS

With the advent of prohibition in this State many places will be turned into soft-drink parlors or bars. The following instructions to employees seem very important at this time:

Wash your hands frequently with soap and hot water. Keep nails short and clean. Always wash hands after visiting toilet or urinal.

Keep hands away from your mouth, nose or hair while serving customers.

Handle glasses near the bottom; keep fingers from the inside or rim.

Glasses, dishes, spoons, and all other eating and drinking utensils shall be washed after each usage with soap or washing powder and very hot water; thoroughly dry before using. Carelessly washed spoons and glasses are the most prolific means of spreading disease from mouth to mouth.

Glasses should not be rinsed at the fountain, and water should not be kept in basins of the fountain.

Straws shall not be placed on counters or tables unless wrapped in individual paper wrappers.

Keep clean and tidy at all times.

Keep all syrups, fudge, punch, etc., covered from flies and dust.

Keep ice-cream cans covered at all times.

Clean stirring rod of electric mixer after each usage.

Do not use tobacco while on active service.

If you are sick, or if there is sickness in your family or where you reside, inform the health officer or your employer.

Be careful and cleanly at all times.

SACCHARIN

The use of saccharin in foods is regarded as an adulteration under the regulations of our Food and Drugs Act.

This department has received many inquiries from manufacturers and bottlers relative to this Department's ruling regarding the use of saccharin, and has been asked by various interests to reverse or at least to reconsider the position taken upon the use of saccharin in food. This position in effect is that investigation has shown that the continued use of saccharin for a long time, in quantities over three-tenths of a gram a day, is likely to impair the digestion, and that the addition of saccharin for cane-sugar and other forms of sugar reduces the food value of the product, and hence lowers its quality.

We are aware of no investigation which contributes any recent evidence pointing to the harmlessness of saccharin, therefore we can see no reason why the standing regulation of this Department should be reversed at this time.

VINEGAR

Vinegar is formed by the alcoholic and subsequent acetic fermentation of apple-juice, wine, beer, sugar-house refuse, etc., and may be briefly described as a dilute solution of acetic acid, though in addition to the acid constituent a true vinegar contains certain other organic and inorganic compounds which give the mild agreeable odor characteristic of the pure food product. The State standard for this food product requires that it must contain at least four per cent acetic acid, one and one-sixth per cent of total solids, and not less than twenty-five hundredths per cent of ash.

vinegar was found on the market.

SAMPLES COLLECTED AND EXAMINED DURING THE YEAR

Sample	No.	Sample	No.
Breast milk.....	18	Minerals	5
Red Cross bandages.....	8	Maple syrup.....	5
Bread (outside of Federal work).....	18	Nitrate samples.....	10
Bone meal.....	2	Nutmeg.....	4
Breakfast foods.....	4	Spirits of nitre.....	4
Butter.....	40	Opium.....	11
Beer.....	4	Oils in sand.....	4
Near beer.....	7	Olive oil.....	5
Cream.....	33	Orange extract.....	12
Candy.....	8	Oleomargarine.....	6
Cornmeal.....	4	Potash.....	200
Cider.....	3	Peppermint essence.....	11
Coloring in foods.....	5	Paint.....	2
Cottonseed and cottonseed cake.....	22	Pickles.....	1
Cheese.....	4	Pills.....	8
Cinnamon.....	5	Pineapple extract.....	5
Cloves.....	5	Pork and beans.....	7
Miscellaneous drugs.....	5	Potato flour.....	5
Forage plants.....	4	Prepared foods.....	10
Fertilizers.....	12	Black pepper.....	4
Ice-cream.....	185	White pepper.....	10
Ice-cream powder.....	4	Soil samples.....	400
Ice-cream cones.....	8	Sugar.....	9
Infant foods.....	25	Stockfeed.....	5
Tincture iron.....	15	Salt.....	4
Tincture iodine.....	8	Snuff.....	8
Jams and jellies.....	12	Sugarbeets.....	21
Limestone.....	7	Tomatoes (canned).....	4
Lemon oil.....	5	Turpentine.....	6
Limewater.....	18	Tea.....	4
Lemon extract.....	18	Tallow.....	15
Lard.....	7	Toilet waters.....	7
Linseed oil.....	4	Vinegar.....	42
Milk.....	695	Vanilla.....	12
Miscellaneous.....	102	Water.....	500
Evaporated milk.....	10	Whisky.....	8

SUMMARY

Seventeen inspections were made under Interstate Inspection consisting of shipments of liquors, canned milk, ice-cream, canned fruits and cottonseed cake. Samples and all data was submitted to the Government Food and Drugs District Chief, San Francisco.

Sixteen hundred thirty-one miscellaneous samples were analyzed.

Twenty legal procedures were taken as directed in section 14 of the Food and Drugs Act, and three seizures under section 19.

Respectfully submitted,

HALBERT B. BULMER,
Acting Commissioner.

DEPARTMENT OF WEIGHTS AND MEASURES

The work of this Department is carried on in conjunction with the Food and Drugs Inspection work. This is really a very efficient and economical system, inasmuch as the field inspector, while making his regular inspections, is able to look over the scales at the same time.

STOCK AND WAGON SCALES

During the past year more attention has been given to the testing of platform scales. A large number have been tested throughout the State. The Department aims, in order to save expense of transporting weights, to have sets of weights distributed in different sections of the State. A set of 500 is held in Tonopah for use in the southern part of the State; 500 in Beowawe for the central section, and 500 in Elko for the eastern portion of the State. One thousand are held in the laboratory for inspections in the western part of the State.

MEASURES

Gasoline pumps, measures, oil delivery wagons and oil tanks were tested over the greater portion of the State.

NEVADA WHEAT

A carload of wheat shipped by the Deputy U. S. Food Administrator of Elko to H. A. Lemmon, Federal Food Administrator, at Reno, and sent to the Riverside Flour Mill, was weighed, sampled and graded by this department. The figures for dockage were supplied by the grain inspectors, San Francisco.

The majority of the thirty-two different lots of wheat were only fair grade; weed seeds, chaff, knuckles and in some cases weavles were found; several lots contained smutty wheat.

The following table gives the name, net weight of wheat, grade per cent dockage and number of pounds per bushel:

Lot No.	Name	Net weight	Grade	Per cent dockage	Percentage, and for what	Pounds per bushel
1	Carter	3349	3 soft white	3	chaff and knuckles	56
2	Davidson	5189	1 red winter	29	chaff 15, seeds 14	60
3	Glaser, Geo.	518	2 soft white	1	barley, seeds, chaff	58.5
4	Quilici	3600	3 white club	2	barley (smut 2)	57
5	Elmore	1122	1 soft white	2	oats 1, chaff 1	62
6	Furniss	960	3 soft white	7	oats 1, chaff 1	56.5
7	Elmore, Mrs. M.	644	1 soft white	3	oats 2, chaff 1	61
8	Baumbach	663	1 hard white	2	seeds, chaff	61.5
9	Overland L. Co.	3067	1 soft white	1	barley, oats, chaff	60.5
10	Webster, P.	1167	1 soft white	1	seeds, chaff	60.5
11	Wood, H. O.	184	2 dark winter	15	stock 7, seeds 8	60.5
12	Forbes	1191	2 soft white	1	barley, oats, knuckles	59.5
13	Hankins	249	2 white club	1	cracked wheat chaff	59
14	Klauer	716	3 hard white	2	barley 1, chaff 1	57.5
15	Green	262	2 soft white	4	barley 1, chaff 3	58
16	Glaser, C.	2757	2 mixed	2	barley 1, chaff 1	58
17	Randolph	374	2 white club	16	chaff, etc., 13, smut 3	56.2
18	Yowell	252	2 soft white	1	chaff, etc.	58.8
19	Taber	708	1 red winter	8	chaff 1, seeds 7	60
20	Gray	387	4 white club	3	chaff, etc.	54.5
21	Wood, E. C.	4412	1 mixed	4	oats 1, seeds, dirt 3	60
22	Clubine	1407	3 soft white	1	barley	57.5
23	Guerena	1150	3 white club	4	barley 1, chaff 3	56
24	Carville	3601	4 soft white	5	oats 1, chaff, etc., 4	55
25	Merkley & Young	3032	2 soft white	none		59
26	Sewell	1833	2 soft white	2	chaff, knuckles	59
27	Mead	1036	2 soft white	13	chaff, seeds 7, knuckles 6	58
28	Shoor	2434	2 soft white	none		59
29	Jeanney	2025	1 red spring	none		60.5
30	Woolf	292	soft white	3	barley 1, seeds 2	50
31	Russell	944	soft white	1	barley, oats, chaff	57
32	Gennette	5165	2 soft white	1	seeds	58.5

BREAD

In order that the Federal Food Administration rulings on bread should not be hampered in any way, the State regulation requiring that "whenever a loaf of bread offered for sale weighs more or less than a pound it shall be labeled with its correct weight together with the name of the manufacturer," it was deemed advisable during the period of the war, at least, not to enforce this provision of the law. Inspection of bakeries was made over the entire State as often as possible. weights of bread, rolls, etc., were taken, and a check made of the flour and substitutes used. This caused considerable annoyance and close observation, inasmuch as a few bakeries were inclined to use more than the proper amount of white flour, thus turning out a whiter and better appearing loaf than one made according to regulations. Through close checking and frequent inspection this infraction of the Food Administration regulation was quickly overcome.

Many samples of bread were purchased and examined at the laboratory. However, now that the war is over, and as soon as conditions adjust themselves, it will be the policy of this department to see that the following section of the Weights and Measures law is lived up to.

"Sec. 12. A standard loaf of bread sold or offered for sale in this State shall weigh one pound and a standard loaf of bread need not be labeled with a statement of its weight. Whenever a loaf of bread sold or offered for sale weighs more or less than a pound, it shall be labeled in plain, intelligible English words and figures with its correct weight together with the name of its manufacturer."

SUMMARY

Twenty scales in use in retail stores were condemned until same were repaired or placed in proper condition. The business houses throughout the State are equipped with the latest and best type of scales on the market, but some take very poor care of their scales, consequently we find a number to condemn on each tour of inspection.

Four large wagon scales were condemned.

Respectfully submitted,

HALBERT B. BULMER,
Acting Commissioner.

SOILS AND WATER LABORATORY

During the past year about 500 water samples have been examined in this laboratory. These are submitted from every section of the State and embrace waters intended for domestic, stock, irrigation, and various industrial applications.

A complete mineral or sanitary analysis is generally requested, and advice as to the waters adaptation for the particular purpose intended.

Analyses have been made of the municipal supplies of many of the cities and towns of the State, and of the water used for drinking purposes on all railroads of the State. Tables I and II give complete mineral and sanitary analyses of samples examined. The column headed "Total Solids," as the name implies, represents the total mineral matter in solution in the water. Reference to the tables will show that for the most part the waters are but moderately mineralized and are well suited for domestic use.

TABLE I. SANITARY ANALYSES OF WATERS

Name	Total solids	Volatile solids	Cl.	SO.	Alkalinity	Hardness	Free ammonia	Alb. Amm.	Nitrates	Nitrates
V. & T., Carson	130	27	Tr.	0	75	124	0	.06	0	0
V. & T., Virginia	132	120	0	0	50	16	0	.08	0	0
Copper B., Mason	468	88	30	50	190	32	0	.07	0	0
T. & G., Tonopah	320	53	20	50	140	160	0	Sl. tr.	0	0
T. & G., Goldfield	419	119	28	40	240	210	0	Sl. tr.	0	0
McGill	232	14	Tr.	0	150	160	Sl. tr.	Sl. tr.	0	0

Name	Source	Total solids	Nitrogen as nitrites	Nitrogen as nitrates	Chlorine	Quality for domestic use
Winnemucca	City	1,009	0	0	178	Fair
Industrial School	Elko	653	0	0	45	Good
Lovelock	City	170	0	0	18	Good
Indian Reservation	Schurz	261	0	0	21	Good

TRUCKEE RIVER POLLUTION

For the past two years the Floriston Paper Mill Company has had Mr. F. C. Coombs, a chemist with wide experience, working on this problem. All the analytical work has been carried on in this laboratory by Mr. Coombs and the problem solved as demonstrated by the experimental plant which he erected at the Floriston Paper Mill. With the data on hand it is earnestly hoped that this vexatious problem will be satisfactorily adjusted in the near future.

TABLE II. MINERAL ANALYSIS OF WATER

Source of sample	Parts per million											Quality for domestic use	Quality for irrigation	
	Silica	Iron	Calcium	Magnesium	Sodium and potassium	Carbonic acid radicle	Bicarbonic acid radicle	Sulphate radicle	Chlorine	Nitrate radicle	Hardness as CaCO ₃	Alkalinity		
Reno (Truckee River)	21	.8	13	4	3	0	52	11	2.5	0	48.9	42.6	Good	Good
Reno (Hunter Creek)	118	.3	19	3	5	0	34	40	1.5	0	59.8	27.8	Good	Good
Carson City	94	Trace	18	6.7	7.1	0	49	Trace	2	0	72.5	40.1	Good	Good
Virginia City	86	Trace	10	Trace	8	0	49	Trace	2	0	25.0	40.1	Good	Good
Dayton (public well)	452	Trace	73	20	18	0	234	76	9	24	133.5	211.5	Poor	Good
Dayton (river)	339	Trace	88	9	64	0	258	41	13	Trace	60.0	72.1	Good	Good
Minden	144	Trace	24	2	13-10	0	153	22	4.9	Trace	108.9	150.6	Good	Good
Gardnerville	225	Trace	37	4	19-12	0	183	24	6.8	5	184.9	115.6	Good	Good
Tonopah	273	Trace	51	14	8	0	141	38	16	11	254.9	67.8	Good	Good
Goldfield	781	.1	79	14	146	0	82	410	56	0	258.7	183.5	Fair	Good
Manhattan	346	Trace	92	7	16	0	236	69	17	4	115.1	101.6	Good	Good
Round Mountain	280	Trace	39	4	21	0	124	38	14	0	234.3	195.8	Good	Good
Las Vegas	287	.2	56	23	11-6	0	239	43	6	2	311.9	287.0	Good	Good
Pioche	322	.4	69	34	9-4	7	350	4.9	7	5	241.0	237.8	Good	Good
Moapa	885	.7	91	3	183	0	245	304	86	1	481.3	442.7	Good	Good
Arden	563	.1	102	43	36-10	0	290	146	11	.45	36.7	109.8	Fair	Good
Austin	381	.3	7	5	49	0	134	19	11	0	96.7	193.5	Good	Good
Ely	210	Trace	48	18	12	0	236	18	4	2	193.8	183.5	Good	Good
McGill	235	Trace	47	17	14	0	231	19	6	2	81.4	189.4	Good	Good
Elko	206	Trace	38	18	3	0	189	44	11	Trace	168.8	113.9	Good	Good
Lovelock	996	.5	134	69	108	4.8	358	395	105	0	617.9	293.5	Good	Fair
Millers	363	Trace	31	9	87	0	175	50	21	Trace	114.4	143.5	Good	Good
Oreana	415	.7	64	11	73	0	182	106	78	0	210.3	149.2	Good	Good
High School Well, Reno	232	Trace	81	50	5	0	169	34	10	7	182.4	138.5	Good	Good
Diamond Mineral Spring	225	Trace	47	11	7	0	146	46	7	1.7	182.6	119.7	Good	Good

SOILS

Four hundred soil samples were submitted by residents of the State. Complete chemical analyses to determine the character of the soil and the amount of available plant foods or for the determination of the character and amount of alkali present were made.

Two hundred samples were examined for potash. These came from all sections of the State, and were mostly referred to this Department by the Mining Laboratory.

Respectfully submitted,

HALBERT B. BULMER,
Acting Commissioner.

